

FORGING THE 10TH MOUNTAIN DIVISION FOR WAR, 1940-1945:
HOW INNOVATION CREATED A HIGHLY
ADAPTIVE FORMATION

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MASTER OF MILITARY ART AND SCIENCE
Art of War Scholars

by

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2017

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ABSTRACT

FORGING THE 10TH MOUNTAIN DIVISION FOR WAR 1940-1945: HOW INNOVATION CREATED A HIGHLY ADAPTIVE FORMATION IN WWII, by Major Justin Chabalko, 142 pages.

As the U.S. Army faces new and uncertain challenges across the globe, the need to create new capabilities in organizations, doctrine, and equipment is critical. As new threats in the sea, air, land and cyber domains appear, it is vital for the Army to produce capable and well-equipped formations that are prepared to adapt and meet any challenges. This thesis examines the relationship between how peace-time innovation influences combat adaptation. It uses the history of the 10th Mountain Division as a historical example of how the Army faced threats in multiple areas of the world. In response, it innovated to create a new capability to fight in the mountains. Using new techniques, it recruited highly experienced volunteers, developed new training and equipment to build a new capability for the U.S. Army. As a result of this innovation, the 10th Mountain exemplified a highly adaptive and successful formation in combat. The War Department's ability to leverage innovation to create an adaptive organization is relevant to the contemporary Army and how it looks at the challenges of multi-domain battle and the Army War Fighting Challenges.

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Climb to Glory!

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ACRONYMS

AGF	Army Ground Forces
BG	Brigadier General
FM	Field Manual
LTC	Lieutenant Colonel
LTG	Lieutenant General
MTC	Mountain Training Center
MTG	Mountain Training Group
MG	Major General
MWWB	Mountain Winter Warfare Board
NSP	National Ski Patrol
U.S.	United States

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CHAPTER 1

INTRODUCTION

There may never be another Mountain Division in our Army. It took General Marshall himself to give you the Mountain patch . . . Mark Clark has told me personally that you were the finest Division he ever had under his command.

— Charles Minot Dole, Address at 1st 10th MTN reunion 1946

The War Department with the help of civilian expertise leveraged innovative techniques to recruit, train and equip the 10th Mountain Division. These innovations, created a formation that was highly adaptive and successful in combat. The 10th Mountain Division's first combat operations in Italy clearly highlight this success. Following three failed attempts in late 1944 to push the German's off the high ground, the 10th Mountain Division was deployed to turn the tide for the 5th Army. In their first large-scale operation, the 10th Mountain Division quickly overcame the problems of terrain and achieved the element of surprise to dislodge its formidable German enemy.

The challenges of mountain warfare span the chapters of military history. Mountainous terrain coupled with dynamic weather challenges any military's ability to move, maneuver, employ direct and indirect fires, conduct logistical operations and conduct medical evacuation.¹ The Mediterranean Theater of Operations during World War II was no exception. The ability to dislodge and defeat German defensive positions that dominated the high ground in northern Italy presented unique problems for the commanders of the Fifth and Eighth Armies in mid-1944. The United States Army and

¹ Harold Winters, *Battling The Elements: Weather and Terrain in the Conduct of War* (Baltimore, MD: The Johns Hopkins University Press, 1998), 187.

the War Department addressed this challenge by employing the capabilities of the 10th Mountain Division.

The formation of the 10th Mountain Division was almost a four-year process. Starting as early as 1940, the foundations for training, equipping and recruit mountain soldiers was evident. The Division was eventually activated and trained for combat at Camp Hale, Colorado. From its initial formation until its eventual deployment to Italy in 1944, the Army used a unique process to address the challenges of creating a new capability. It leveraged America's civilian alpine expertise alongside Army leaders to train, man, and equip the division. This concept was an innovative process that was used to build a new capability for the Army. This new capability gave the Army an advantage in the mountains of northern Italy in late 1944 and early 1945. The division's initial missions were the trigger for the Allied spring offensive in 1945. It continued to lead 5th Army north through Italy until the war's end. Throughout this time, the division employed new techniques, developed during their training at Camp Hale, to enable them to adapt quickly to their wartime situations and successfully conduct their operations in northern Italy.

The capabilities of the 10th Mountain Division were unique and represented some of innovative qualities of its early leaders. It displayed the qualities of the American society it represented. Americans still remembered the sacrifices of the First World War and saw the need to assist the nation in whatever way they could. They felt compelled to protect their country and their way of life. The final product of this patriotic assistance was a mountain division that helped the U.S. Army by bringing physically fit, educated, innovative and highly experienced mountain soldiers to combat. The division was

initially organized to conduct high altitude mountain operations. Once the Army decided to employ its capabilities in Italy, it was augmented with additional enablers such as wheeled transport, more artillery and tracked vehicles. However, it still retained the specialized equipment, skilled personnel and most of its original organization structure.² The division's unique skills proved useful and were critical to the success of 5th Army's Operation Encore. This operation broke the stalemate between the Allied and German lines in early 1945. The Army used highly trained mountain infantry to overwhelm and present multiple dilemmas for the Germans. These men relied on their mountain training to take the high ground from the Germans. Their actions were critical to the U.S. Fifth Army's commander's plan to break through the Po River Valley.³ The division would continue to improvise and create opportunities as the allied forces would pursue the Germans north through Italy. By the end of the war, the 10th Mountain Division displayed their capability to "Climb to Glory."

This paper focuses on how innovation influenced the recruitment, training and equipping of the U.S. Army for mountain and winter warfare training from 1940 to the official establishment of the 10th Mountain Division in 1943. It also looks briefly at innovation and the division's training in 1944. Finally, it examines the division's first involvement in the Mediterranean Theater of Operations in support of Operation Encore from January to March 1945. It examines this period to see how peacetime innovation

² Gordon Rottman, *US 10th Mountain Division in World War II* (Long Island City, NY: Osprey Publishing, 2012), 15.

³ Ernest Fisher Jr, *US Army in World War II: Mediterranean Theater of Operations; Cassino to the Alps* (Washington. DC: Center of Military History, 1977), 425.

drove the division's ability to adapt quickly during their first combat operation. The research questions to be addressed are: Did peace-time innovation drive war-time adaptation for the 10th Mountain Division? Why was the 10th Mountain Division formed and did it provide the capability the Army wanted? How did the use of civilian expertise to recruit volunteers and assist in training and equipment development from 1940-1944 influence the organization? Did the division adapt to address tactical and operational challenges during Operation Encore?

The answers to these questions provide insight into how the United States military uses innovative ways to create capabilities to address challenges and the correlation of how this process impacts an organization's ability to adapt in the face of war. The research of the creation of the 10th Mountain Division and its exploits in northern Italy look to highlight this unique process. It also underscores the characteristics of a unit forged through innovation and how it brings these unique qualities with it to combat. These linkages present potential implications for how the U.S. Army creates future capabilities. To provide highly agile and adaptive formations in combat, units and capabilities must be trained and developed through innovative techniques.

Research Methodology

Many histories written about the 10th Mountain Division during World War II focus primarily on the timeframe from 1943 to the conclusion of their operations in the Mediterranean in 1945. Although some sources briefly address the years before the division's activation in 1943, it is one of the least discussed periods of the history about the U.S. Army's training for mountain and winter warfare. This timeframe from 1940 to 1943 does not directly involve the 10th Mountain Division, but it is the most significant

period for understanding how and why the division was formed. This paper will primarily focus on this timeframe to highlight the impacts that innovation had on the division. Additionally, the reports and studies created during this period tend to highlight the shortcomings and pitfalls that hampered progress. These observations can present a bleak outlook on the achievements of how the Army worked through the problems of training for mountain and winter warfare. However, these assessments take a myopic view on the topic. In isolation these events did present challenges to the Mountain Training Center and the 10th Mountain Division. However, when you look at the success of the Division in combat it starts to become readily apparent that these challenges only increased the capability of the formation and its leaders. This paper attempts to take a holistic look at how the early events that involved training for mountain and winter warfare influenced the capability of the 10th Mountain Division. Where possible, primary source material is used to accurately inform the history and the understanding of factors that affected the key decision makers involved in the history of the 10th Mountain Division.

Chapter 1 gives a broad overview of the political and military context of the time as it pertains to the national sentiment for war. It highlights how that sentiment drove the mobilization and training efforts for the Army. Additionally, this chapter discusses the Doctrine, Organization, Training, Material, Leadership, Policy and Facilities construct currently used by the U.S. Army. Parts of this construct are used to examine specific areas of this history for innovation and adaptation. This chapter also defines innovation and adaptation within a military context. The primary sources used to inform this section include two sources titled *Neutrality for the United States* and *A Foreign Policy for the United States*. Each gives background to the political situation in the U.S. in the early

1940s. The Center for Military History publication *Training in the Ground Army* is used to inform how the Army was organized to mobilize and train for war. Finally, Dr. Williamson Murray's book *Military Adaptation in War* is used to define the terms innovation and adaptation for the analysis contained in this paper.

Chapter 2 discusses the involvement of Charles Minot Dole and John E. P. Morgan from the National Ski Patrol (NSP) and how they influenced the War Department's decision to start training for mountain and winter warfare. It also looks at innovative nature of how the NSP assisted in the recruitment of volunteers for mountain and winter warfare training and how they helped with the initial development of winter warfare equipment for the Army. The primary sources that were used to inform this chapter were the *Charles Minot Dole Papers*, courtesy of the Denver Public Library Archives. These primary sources include official correspondence between Charles Dole and various member of the War Department to include General George C. Marshall. It also includes a paper written by Minot Dole after the conclusion of the war entitled "The Birth Pains of the 10th Mountain Division" that distills the efforts of Dole, John E. P. Morgan and the NSP to assist in the recruitment, training and equipping of soldiers for mountain and winter warfare.

Chapter 3 looks at the creation of the 87th Mountain Infantry Regiment as the U.S.'s first mountain test unit, the formation of the Mountain Training Center (MTC) and its eventual establishment at Camp Hale, Colorado, and the creation of the Mountain Winter Warfare Board. Each organization is examined to highlight the innovative techniques used for training, the early development of doctrine and the testing and evaluation of new winter and mountain warfare equipment. The primary sources for this

chapter include two studies conducted by the Army Ground Forces. The first, is study number 23, titled “Training for Mountain and Winter Warfare”. This report was generated using official War Department correspondence and data compiled within the official histories of the MTC and the 10th Mountain Division. It provides an overview of the major events that occurred in the Army from 1940 to 1945 involving mountain and winter warfare. The second is study number 24, titled “The History of the Mountain Training Center”. This report was primarily written using official interviews and War Department memoranda, Army Ground Forces observer reports and official written correspondence. It gives a detailed account of the earliest days of mountain and winter warfare training. It gives a detailed account of the decisions made by the War Department to create a mountain and winter warfare unit in the Army and addresses the unique challenges and innovative techniques associated with developing training, equipment, and doctrine for a capability that the U.S. Army did not previously possess.

Chapter 4 briefly addresses the early training of the 10th Mountain Division before its deployment to Italy. The chapter transitions to a comprehensive look at how the division adapted during its first operations at Riva Ridge and Mount Belvedere. This section draws the linkages between early innovation and how it impacted the adaptability of the Division. The sources in this chapter are primarily primary source documents including an operational report titled *The Riva Ridge Operation* by a battalion commander from the 86th Infantry Regiment. Additionally, the original operations orders are referenced to understand the tactical situation as the division comprehended it before the conduct of operations. This section also includes a paper written at Fort Benning after the war on the attack on Riva Ridge and Mount Belvedere. The paper’s author was in the

division during the attack and highlights successful adaptations by various units during the operation. Each chapter is designed to inform historically while also highlighting the successful innovation and adaptation that occurred throughout the period examined.

National Sentiment and Training for War

Understanding the political and societal environment during the interwar period is critical to understanding what drove political and military decisions up and leading into World War II. During the period following World War I the United States was faced with unique problems. Given the amount of national treasure (money, natural resources, and American lives) expended during the First World War the United States would enter a period of regression, eventually known as the Great Depression. Anti-war sentiment and a general appeal to keep the United States out of international affairs was prevalent at the time. In 1937, President Franklin D. Roosevelt suggested a “quarantine” policy to the people of the United States recommending the country assist in isolating belligerents, presumably Japan, Italy, and Germany.⁴ The public and the Democratic Party presented stiff opposition to this policy. The people of the United States had no desire to get tangled up in world affairs again. This challenged the President’s ability to shift toward a more interventionist policy.⁵ The United States Congress also passed a series of neutrality acts between 1935 and 1939, these acts initially limited the U.S. involvement in all

⁴ Charles Beard, *A Foreign Policy For America* (New York, NY: Alfred A. Knopf, 1940), 140.

⁵ Ibid.

international affairs and did not distinguish between aggressors and victims.⁶ This stance would slowly shift and by 1939 give the administration more flexibility to enact embargoes on its aggressors.⁷ It is at this point that we begin to see a shift from a complete isolationist policy by the United States to one that slowly becomes willing to involve itself in foreign affairs again.

In 1941, two years later, President Roosevelt ran and won on a platform to keep America out of the war. His platform touted a strong foreign policy that did not call for American intervention. Many Americans supported this policy. Additionally, this stance was reiterated in the Democratic Party's promise:

We will not participate in foreign wars, and we will not send our Army, Naval, or Air Forces to fight in foreign lands outside of the Americas, except in the case of attack. . . . The direction and aim of our foreign policy has been, and will continue to be, the security and defense of our own land and the maintenance of its peace.⁸

This policy direction for the defense of the continental United States fueled the need for America's first alpine troops.

Having an understanding of how the Army was organized to train divisions during this period is crucial to understanding how information flowed from the highest echelons to the individual and collective executors on the ground. From July of 1940 to end of World War II the Army consolidated all training requirements and guidance under the

⁶ Edwin Borchard and William Lage, *Neutrality for the United States* (New Haven, CT: Yale University Press, 1940), 398-399.

⁷ Ibid., 395-396.

⁸ Gerhard Peters, "Political Party Platforms: 1940 Democratic Party Platform," The American Presidency Project, accessed December 23, 2016, <http://www.presidency.ucsb.edu/ws/?pid=29597>.

Army General Headquarters (GHQ), which would transform into the Army Ground Forces (AGF) Headquarters on March 9, 1942.⁹ The AGF would communicate its guidance and intent under the AGF Chief of Staff Lieutenant General Lesley J. McNair to four training Field Army Headquarters. Each of the four Regional Army Headquarters would be responsible for all training functions for tactical troops in the region.¹⁰ Underneath the Regional Headquarters was the Corps Headquarters. These headquarters operated directly under the guidance of the G-4 of the War Department and were responsible for “the system of supply and for the construction, maintenance and repairs of all posts, camps and stations.”¹¹ This delineation of authority and responsibility is an important aspect for understanding the challenges the 10th Mountain Division faced during its time preparing for combat.

As the chief of staff of the GHQ, General George C. Marshall delegated the authority for the training of the Army to LTG McNair.¹² Once the AGF replaced the GHQ, LTG McNair would then have all authority for training as the Commanding General and would consistently report to General Marshall on his recommendations for the way forward. Interestingly enough LTG McNair was in opposition of specialized training for the Army. As early as January of 1941 LTG McNair communicated this

⁹ Kent Greenfield, Robert Palmer, and Bell Wiley, *US Army in World War II: The Army Ground Forces; The Organization of Ground Combat Troops* (Washington, DC: Center Of Military History, 1987), 4.

¹⁰ *Ibid.*, 8.

¹¹ *Ibid.*

¹² *Ibid.*, 6.

concern in writing to General Marshall titled “Specialized Training in the Training Phase of the Military Program”.¹³ His concluding remarks were the following:

“I do not question the need of special training, but believe that in general its priority is below both expansion and sound general training, and that such special training should be minimized until the fall of 1941, perhaps later.”¹⁴ This memorandum is indicative of LTG McNair’s views on specialized training. He felt that it always took a secondary role to standard training practices. This was one of the contributing key challenges for the 10th Mountain Division as it trained for war.

In October of 1942, AGF headquarters outlined a directive program for the training of divisions.¹⁵ The following month communications between LTG McNair and the Commander of the Second Army, LTG Benjamin Lear delineated the requirements for the formal conduct of winter and mountain training. The directives summarized in this memorandum were published nine days after the official opening of Camp Hale, Colorado and slowly began to shape the intent for how winter and mountain training was conducted. This guidance from LTG McNair, gave the Second Army Commander the initial metrics for the training for any mountain troops in his region.¹⁶ A second

¹³ Ibid., 38.

¹⁴ LTG McNair to GEN Marshall, memorandum, 353/136: Specialized Training in the Training Phase of the Military Program 16 Jan 1941, Eisenhower Presidential Library, Collection of 20th Century military records 1918-1950, Series III, Box No 3.

¹⁵ Bell Wiley, “Training in the Ground Army 1942-1945” (Study No. 11, Historical Section - Army Ground Forces, Fort Monroe, VA, 1948), 4.

¹⁶ Headquarters Army Ground Forces, Memorandum 353/37: Winter Training Directive, p 1-2. Eisenhower Presidential Library, 10th Mountain Division, Box No. 822.

memorandum was sent on January 8, 1943 directly to the Commanding General of the Mountain Training Center at Camp Hale. This memorandum further outlined and enabled subordinate leaders to begin to train, experiment, and innovate to meet the demanding requirements of mountain and winter warfare training.

DOTMLPF Framework

The U.S. Army currently uses the structure of Doctrine, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) to “resolve or mitigate capability gaps”¹⁷ that cannot be resolved using the current capabilities. The formal concept of DOTMLPF was not present in Army Doctrine from 1940-1945. However, the Army did take a similar approach in addressing its capability gaps. From 1940-1941, the Army developed specialty means that were different from the standard arms of infantry, cavalry, artillery, engineers, etc. These specialties ranged from tank destroyer units to airborne, amphibious, and mountain units. During this timeframe, each specialty trained under provisional structures. These provisional entities were not always nested with the overall training strategy for the Army.¹⁸ This eventually changed with the establishment of the AGF Headquarters in 1942. The establishment of “commands” or “centers” were created to formalize the responsibility of the “development of equipment, doctrine and

¹⁷ Training and Doctrine Command (TRADOC), TRADOC Regulation 71-20, *Concept Development, Capabilities Determination, and Capabilities Integration* (Fort Eustis, VA: Government Printing Office, 2013), 71.

¹⁸ Greenfield, Palmer and Wiley, *US Army in World War II: The Army Ground Forces; The Organization of Ground Combat Troops*, 396.

the training of enlisted and officer personnel.”¹⁹ For the 10th Mountain Division, this was the Mountain Training Center (MTC) at Camp Hale, Colorado. The MTC and eventually the 10th Mountain Division addressed the challenges of doctrine, organization, training, and material. Therefore, this paper will focus on these areas when assessing where innovation occurred and how it impacted the division’s ability to adapt during combat operations.

One key component of how the Army trains and prepares for war is through the creation and use of doctrine. Doctrine provides the framework and baseline for how the Army executes its missions. By contemporary definitions, doctrine provides a guide for the execution of military tasks, based on the current capabilities of the organization and the lessons learned through training and exercises.²⁰ When examining the 10th Mountain Division and the organizations that helped it prepare for war, it is critical to understand the impact of not having doctrine. It gave leaders and organizations the flexibility to experiment and develop practices that eventually became doctrine. However, it also made the initial creation of training plans and assessments extremely hard to develop since there was no starting point. In January 1943, a memorandum was sent to the MTC from the AFG Headquarters. This memorandum indicates that only Field Manuals were

¹⁹ Ibid.

²⁰ Chairman of the Joint Chiefs of Staff, Chairman of the Joint Chiefs of Staff Instruction 3010.02D, *Guidance for Development and Implementation of Joint Concepts* (Washington, DC: Government Printing Office, 2013), A-3.

available on cold weather training.²¹ It was not until December of 1944 that the Army finally published Field Manual 70-10: *Mountain Operations*. Additionally, the Army published a subsequent version in 1947. This version was presumably created using the lessons learned throughout the war. This lack of doctrine early on, potentially aided the innovation that occurred at the MTC and during the early days of experimentation. However, it came at a cost. Precious time and manned hours had to be consumed in the beginning since everything had to be created for the first time. One thing is very clear. The work of the MTC and the staff of the 10th Mountain Division played a large role in developing mountain and winter doctrine for the U.S. Army.

Another key component in an Army's success is training. Training is the keystone to achieving success in mission execution. In preparations for World War II, the U.S. Army faced significant challenges in maintaining quality control over how divisions and non-divisional units were formed and trained for combat. The challenges had an impact on the Mountain Training Center and the 87th Mountain Infantry Regiment from 1941 to 1943. Since these two units formed the division's initial nucleus, the issues, and challenges they faced permeated through the division in 1943. Training issues were plagued by lack of resources and personnel. Both issues were further exacerbated by the fact that mobilization requirements initially outpaced the capabilities of the selective service and the industrial base.²² Between War Department strategic plan changes and the

²¹ Headquarters Army Ground Forces, Memorandum 353/79: Directive for Training of Mountain Units, 1-2. Eisenhower Presidential Library, 10th Mountain Division, Box 822.

²²Wiley, "Training in the Ground Army 1942-1945," 21.

overall expansion of the Army, personnel replacements were constantly redirected to different units. This left units like the MTC and 10th Mountain Division with a constant and slow trickle of new personnel. The effect was that units constantly had a new pool of untrained soldiers arriving at their location. It was also standard for many divisions to only be manned at 75 percent strength.²³ There was also a shortage of well-trained officers and junior leaders. Examples of these issues included non-divisional unit commanders being directly commissioned from civilian life with no military experience. Generally, they brought a robust technical background but had no Army expertise. Additionally, key staff officers were routinely put into key assignment without the appropriate military education such as the Command and General Staff College.²⁴ Each issue was consistent across the Army prior to 1943. However, the unique recruitment by the National Ski Patrol left the majority of the 10th Mountain Division with highly intelligent, physically fit and technically skilled soldiers.

In addition to personnel issues, the Army also was challenged to meet the logistical requirements for training. Due to the shortage of equipment and ammunition, non-divisional units were issued only 20 percent of their authorized equipment. This alone had a tremendous negative impact on a unit's ability to train. The observations made by the Army Ground Forces cited that commanders and units relied:

to a large extent in the capacity of unit and higher commanders for perseverance, and their ingenuity in borrowing, pooling, and improvising. Blocks of wood were used for mines, sandbags for ammunition boxes, galvanized iron pipes mounted

²³ Ibid., 22.

²⁴ Ibid., 25.

on ration carts for artillery, sticks for guns, and “jeeps” for tanks, not to mention a long list of mock structures, ranging from landing craft to “Nazi Villages.”²⁵

Although recommendations by LTG McNair were made to address the issue, non-divisional units did not see more equipment to train with until the summer of 1943. This occurred when the industrial sector finally began to catch up with the war-time demands.²⁶

The final area of concern that the MTC and the 10th Mountain Division wrestled with was the most complicated. The challenges of creating summer and winter mountain warfare equipment. At the time, the Army had minimal cold weather equipment. The equipment that did exist was old and obsolete. By 1940, little work had been done to update anything that remained in the Army inventory from the First World War.²⁷ The Army eventually created a provisional entity known as the Mountain and Winter Warfare Board (MWWB). The MWWB was devoted to the development and experimentation of equipment and development of doctrine. It also received outside assistance from the Equipment Committee of the National Ski Patrol Association.²⁸ The 10th Mountain Division leveraged this capability along with the expertise of the MTC’s expertise to build proficiency in training and the use of specialized equipment. Innovation defined

²⁵ Bell Wiley, “Problems of Nondivisional Training in the Army Ground Forces” (Study No. 14, Historical Section - Army Ground Forces, Washington, DC, 1946), 50.

²⁶ Ibid.

²⁷ John Jay, “History of the Mountain Training Center” (Study No. 24, Historical Section - Army Ground Forces, Washington, DC, 1948), 96.

²⁸ Ibid.

these organizations and further assisted in helping the division innovate until its final departure to war.

The areas of Doctrine, Organization, Training, and Material of the DOTMLPF construct discussed in this paper focus the analysis and highlight innovation in specific areas. By highlighting where innovation occurred, it is easier to understand how it translated at an organizational level to create an adaptive organization. Each area is analyzed from the early stages of training in 1940 to the formation of the MWWB and MTC and up through the training of the 10th Mountain Division before its final departure to Italy in 1945. The ability for the 10th Mountain Division to quickly adapt in these areas highlights the linkage between how innovation created an organization that was able to adapt and overwhelm the enemy in mountainous terrain. The division's first operation in Italy is used to highlight this capacity to adapt rapidly and reinforces the impacts that innovation had on the organization.

Innovation and Adaptation

The goal of the United States Armed Forces is to fight and win the Nation's wars. The Army must seek new ideas and evolve institutionally to win against a determined enemy or a new threat. Contemporary innovators say "The best way to win in this world is through innovation."²⁹ However, an argument can be made that in the military profession, innovation alone will not prevail. Success for an Army requires both innovation and adaptation to occur. How innovation and adaptation are defined is

²⁹ A.G. Lafley and Ram Charan, *The Game Changer: How Every Leader Can Drive Everyday Innovation*. (New York, NY: Random House, 2008), ix.

important to this argument. Each definition must be applied in the context of military organizations and military operations. Military historian Dr. Williamson Murray published a book on this topic entitled *Military Adaptation In War: With Fear of Change*. In his book, Dr. Murray articulates the differentiation between innovation and adaptation as it applies to military organizations. He argues that the processes of adaptation and innovation are similar in many ways. However, the environments in which each occurs are significantly different.³⁰

In this context, innovation is the process that occurs during a military organizations peacetime training. In peacetime, there is time available to think through the issues that confront an organization and time to deliberate and refine changes. Time also allows for a thorough and methodical process to create change. Although this method can lead to achievements in developing new tactics, techniques, organizational structure or equipment, it lacks the continuous friction of a war-time environment. It attempts to but cannot ever fully account for the friction that is caused by an adaptive belligerent. It is in a time of war and conflict that adaptation occurs. In this environment, time is constrained. However, there is the invaluable evidence of combat results. This immediate feedback helps aid in the process of adaptation.³¹ Using the Clausewitz term of war as a contest of wills, a duel between two opponents, each opponent is attempting

³⁰ Williamson Murray, *Military Adaptation In War: With Fear of Change*. (Cambridge, MA: Cambridge University Press, 2011), 2.

³¹ Ibid.

to adapt and change to defeat their opponent.³² Therefore, adaptation is paramount to success in combat operations. The military or unit that adapts the fastest will constantly hold an advantage over their opponent.

Given the nature of this problem, it would seem that the concepts of innovation and adaptation would thrive in most military organizations, yet they do not. The explanation is simple. It is the rigid discipline that is required in combat, to follow orders and execute tasks in the face of great danger, that is contrary to the process of adaptation.³³ Murray states that “It is the inherent tension between the creation of disciplined, obedient military organizations, responsive to direction from above, and the creation of organizations adaptive to a world of constant change that makes military innovation in peacetime and adaptation in war so difficult.”³⁴ It is this challenge that makes the 10th Mountain Division’s formation and its immediate successes in war so interesting. It suggests that innovation and adaptation are not mutually exclusive. It shows a clear linkage between innovation during training and quick adaptation in combat. Furthermore, this quick adaptation occurred in a theater where previous veteran units struggled to achieve similar successes.

For this paper, the peacetime innovations involving the recruitment and training of personnel and the development new equipment are analyzed. It looks at how the

³²Carl Von Clausewitz, *On War* (Princeton, NJ: Princeton University Press, 1976), 75-81.

³³Williamson Murray, *Military Adaptation In War: With Fear of Change*. (Cambridge, MA: Cambridge University Press, 2011), 3.

³⁴Ibid.

organization used the unique skills and qualities of the personnel that it recruited. It highlights the process the United States War Department leveraged using the experience of the National Ski Patrol to help recruit, train and equip soldiers for the 10th Mountain Division. It examines how this innovation played a critical part in the formation of the Division and defines the linkages that made it so adaptive in combat.

Conclusion

In conclusion, this paper will use Murray's criteria as outlined above to create a lens that will be used to assess how innovation directly impacted the ability of the 10th Mountain Division to adapt in war. It focuses on the unique events leading up to the formation of the Division. It examines the four-year period prior to its deployment to Italy to highlight the innovative techniques used to recruit, train and equip the formation. The methodology in this paper is not meant to be an absolute model for determining the linkages between innovation and adaptation. However, it offers an argument that the linkage does exist and that in this case the impact was tremendous. The amount of innovation that occurred during peacetime correlated to the Division's significant ability to adapt quickly in war.

CHAPTER 2

THE NATIONAL SKI PATROL

Somewhere over a hot rum or two and the discussion led to the phenomenal job the Finns were doing on the Karelian Isthmus in crucifying the Russians. A perfect example of men fighting in an environment with which they were entirely at home and for which they were trained.

— Charles Minot Dole

In the period leading up to the 1940s, the United States Army had a unique problem. Most major armies had a fairly coherent picture of where they thought they would likely fight next. This information allowed them to organize, train, and equip armies that were prepared to fight in those regions. For the U.S. military, the choices and options varied significantly. The options for the U.S. Army included the hills and grasslands of central Europe, the Alps, the deserts of North Africa or the islands of the Pacific. In retrospect, each possibility became a reality. However, in 1940, the nebulous nature of this problem accompanied by fiscal and man-power constraints created a challenging situation. Due to this unforeseen future, the U.S. Army decided specialized training was not initially a priority.³⁵ However, in 1939 a conflict broke out between Russia and Finland aptly named the “Winter War”. Many assumed that the Russian Army would not find itself challenged. In contrast, the actions and tactical successes of the highly-trained Finnish ski troops piqued the interest of many American civilians.³⁶ This event and the key players identified in this chapter were the catalyst that drove the War

³⁵ Thomas Govan, “Training in Mountain and Winter Warfare” (Study No. 23, Historical Section – Army Ground Forces, Washington, DC, 1946), 1.

³⁶ Ibid.

Department to begin to experiment with the ideas of building a mountain and winter warfare capability for the Army.

By 1940, the War Department began to receive increased funding and resources for mobilization and training. This additional funding gave the War Department enough flexibility to begin to experiment with specialty programs such as airborne and amphibious training. However, these specialty programs were resourced second in priority to training the ground army.³⁷ It is also around this time that the first instances of involvement by the National Ski Patrol (NSP) begin to surface. From 1940 until 1945 the NSP and its leaders were heavily involved in the innovative strategy to recruit quality personnel, assist in the assessment of training and the development of new equipment. Most of this involvement and innovation occurred between 1940 and 1943 and was driven by two of the most renowned ski philanthropists in the U.S., Charles Minot Dole, and John E. P. Morgan.

Charles Minot Dole was born in 1899 and learned to ski at a young age as a member of the Boy Scouts. Dole enlisted at the age of 18 during the First World War. However, the war concluded before he finished basic training. During basic training, Dole received the beloved nickname “Minnie” that would stick with him for the rest of his life. In 1936, Dole experienced a minor ski accident while out with friends and family. The failures in the ability of responding personnel to render care and evacuate him promptly piqued his interest in developing an organization with training and structure to provide aid to skiers in the event of an accident. Two years later Dole began

³⁷ Ibid., 2.

his long and passionate journey creating and running the National Ski Patrol System.³⁸ Charles “Minnie” Dole not only had a love for skiing but had a passion for his country and for what he was able to do for the men of the 10th Mountain Division.³⁹ He never allowed himself to be turned down at the first obstacle. Dole’s persistence, personality, leadership qualities and outdoor expertise all played a part in his success. These qualities also played a part in his ability to earn an audience with General George C. Marshall and key members of the War Department to discuss the importance of mountain and winter warfare training.

John E. P. Morgan was born in 1895 and served in World War I. Upon his return from the war Morgan began skiing recreationally. In the 1930s his interests in ski safety was sparked while serving on a commission reviewing ski injuries. The report’s findings indicated that organized and properly trained personnel were essential in treating and evacuating injured skiers.⁴⁰ This report and Morgan’s interest fully supported Dole’s desires to create the National Ski Patrol System. Morgan served as the financial adviser for the NSP. Additionally, his personal relationship with Dole also played a critical part in assisting with their endeavors to help support the war effort through the use of the NSP.

³⁸ Webmaster, “New England Ski Industry Biographies: Minnie Dole Biography,” April 5, 2011, accessed January 31, 2017, <http://newenglandskihistory.com/biographies/doleminnie.php>.

³⁹ Speech “Birth Pains of the 10th Mountain Division” Charles Minot Dole Papers, Denver Public Library Box No. 8, 1.

⁴⁰ Webmaster, “John E. P. Morgan,” U.S. Ski and Snowboard Hall of Fame and Museum, January 1, 2011, accessed January 31, 2017, http://www.skihall.com/index.php?_a=document&doc_id=11&id=233.

Another key figure in supporting Dole's aspirations to form the National Ski Patrol Association was Roger Langley. Langley was the president of the United States National Ski Association and was vital in the early development of competitive skiing in the United States. It was Langley's support and the National Ski Association that gave Dole the ability to formally create the NSP.⁴¹ Additionally, Langley's support to Dole bolstered his credibility in Washington through Langley's numerous social connections. Roger Langley's role was critical to Dole's initial success in pursuing the need for mountain and winter warfare capability in the Army.

The Catalyst for Change

In the written papers of Charles Minot Dole, a clear narrative exists that highlights a series of unique events that led to his involvement with the War Department. Dole notes a discussion in 1939, with close friends and Roger Langley that centered around the success of the Finnish ski troops against the Russians. This conversation spurred further debate about the preparedness of the U.S. to defend against a surprise invasion. Additionally, the group concluded that a vast percentage of the United States' borders are under snow for a good portion of the year.⁴² Although an invasion seemed unlikely, it did pose a unique concern. The history of the U.S. Army indicated that U.S. Soldiers had never prepared to fight large scale operations in extreme cold and mountainous terrain.

⁴¹ Webmaster, "Roger Langley," Canadian Ski Hall of Fame and Museum, January 1, 2011, accessed January 31, 2017, <http://www.skimuseum.ca/biodata.php?lang=en&id=67>.

⁴² Speech "Birth Pains of the 10th Mountain Division" Charles Minot Dole Papers, Denver Public Library, Box No.8, 1.

Dole explained that this realization was where “his obsession began”⁴³. After more discussions on the issue, Roger Langley eventually sent a letter to the Secretary of War in May of 1940 offering the services of the National Ski Associations in support of the country’s defense.⁴⁴ This letter prompted a response, but the War Department indicated no interest in his services. At this point, Dole’s persistence clearly emerges.

One month later Dole traveled to Governor’s Island, New York to vent his frustrations to someone in uniform. His initial engagement with a junior officer explained his position with the NSP and what he thought the organization could provide. One week later, he was granted an audience with the Chief of Staff, General Peterson. After explaining his position a second time, Dole received support and positive feedback supporting his concerns. However, reality struck when General Peterson, although sympathetic and supportive of Dole’s concern explained that to gain any traction on the subject he would need to engage someone in Washington, D.C. and even that might prove to be fruitless.⁴⁵ Dole was facing a bigger challenge than he had initially anticipated. However, he would exhaust every means available before he considered his ambitions defeated.

Following the meeting at Governor’s Island, Dole contacted John Morgan and formulated a plan of action for how to engage the bureaucracy in Washington. His first step was to address a letter to President Roosevelt explaining that he wished an audience

⁴³Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

in Washington. He outlined his argument concerning the need for a winter defense force and offered the services of the NSP.⁴⁶ Dole did not expect the letter to receive any traction. However, he figured it was at least worth a shot. Dole stated, “I knew the waste basket would catch that one and almost fell out of my seat when he replied.”⁴⁷ The President’s office thanked Dole for the letter and indicated that it would be forwarded to the appropriate entity for review. This response did not grant Dole and Morgan their much-desired audience. However, it indicated a glimmer of hope that their ideas had a chance of being considered. In the following days, Dole received a wire from the Secretary of War’s office offering a meeting in Washington.⁴⁸ Dole and Morgan would eventually have the opportunity to engage Secretary of War’s aide and plead their case yet again. After presenting their case at the War Department, they were immediately ushered out of the building without any feedback on how well their argument was received. On their way out, they met a young officer by the name of Captain Ridge Gaither. During a cordial discussion with Gaither, Dole and Morgan explained why they were there. Upon departing ways Gaither exclaimed “Damn interesting thought. If we were ever going to do anything like that could you help us on equipment?” to which Dole

⁴⁶ Letter “Charles Minot Dole to President Franklin D. Roosevelt” July 18, 1940. Denver Public Library, Charles Minot Dole Papers, Box No.7.

⁴⁷ Speech “Birth Pains of the 10th Mountain Division” Charles Minot Dole Papers, Denver Public Library, Box No.8, 2.

⁴⁸ Letter “Charles Minot Dole to Special Assistant to the Secretary of War Mr. Arthur E. Palmer” September 10, 1940. Denver Public Library, Charles Minot Dole Papers, Box No.5.

replied “Yes, we surely could. Thanks, we will be back in a month.”⁴⁹ Although promised nothing, Dole and Morgan were reinvigorated in their pursuit to provide their services to the War Department.

Over the next month, Dole and Morgan, cobbled together as much material as they could find on mountain troops in other countries. They were prepared to present this information in the form of a rudimentary scrapbook. They took the book back to Governors Island for the second time to get feedback on what they had done.⁵⁰ This engagement was more positive. However, it seemed that their ideas would never get traction without a direct engagement with General Marshall.⁵¹ The process to this point had proved challenging, to say the least. The problem was that Dole and Morgan had to somehow arrange a meeting with one of the busiest and most respected military leaders in the War Department. Not allowing himself to be abated, Dole contacted the Secretary of War’s Office on September 6, 1940, requesting a meeting with General Marshall.⁵² Three days later, Dole received a letter granting him an audience with General Marshall that Thursday at 10 a.m.⁵³ In the face of insurmountable odds and continued challenges,

⁴⁹ Speech “Birth Pains of the 10th Mountain Division” Charles Minot Dole Papers, Denver Public Library, Box No.8, 2.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Letter “Charles Minot Dole to Mr. Arthur T. Palmer Special Assistant to the Secretary of War” September 6, 1942. Denver Public Library, Charles Minot Dole Papers, Box No.7.

⁵³ Letter “Mr. Arthur T. Palmer Special Assistance to the Secretary of War to Charles Minot Dole” September 9, 1942. Denver Public Library, Charles Minot Dole Papers, Box No.7.

somehow two civilian skiers had secured a meeting with the Chief of Staff of the Army. From Dole's accounts of the meeting, it was short, direct, and indicated that one way or another, General Marshall would make a decision on their proposal.

Within a short time, Dole and Morgan would indirectly have their answer, at least temporarily from the War Department. That answer came in the form of two Army advisors, both members of the General Staff, that were sent to liaise between the U.S. Army and the NSP leadership. Minnie Dole has stated that the "10th Mountain Division owes an everlasting debt to these two men. They believed from the start and nursed this project along."⁵⁴ It was also with the help of these two individuals and a query from Dole in regards to what equipment the Army planned to use if a plan was approved to train Alpine soldiers. This discussion led to the discovery of an Alaskan Equipment catalog dated 1914. After a review of the contents, Dole quickly recommended to the General Staff liaison officers that the catalog and its contents be thrown out. He recommended a total overhaul of all of the equipment. However, anyone that is familiar with how an Army equips its soldiers, understands that it is never as easy as just starting over. The process of testing, bidding, and procurement takes time, money and effort. Therefore, if Dole were to influence the lack of adequate winter and alpine equipment it would take time and resources. Given the limited scope of the NSP's initial involvement, this endeavor took a backseat to other priorities that were given to the NSP.

⁵⁴ Speech "Birth Pains of the 10th Mountain Division," Charles Minot Dole Papers, Denver Public Library, Box No.8,2.

By November of 1940, the NSP received its first true mission from the War Department. A letter from General Marshall to Dole indicated how the NSP would initially support the war effort. His letter included the following guidance:

The personnel of the National Ski Patrol, acting as a volunteer civilian agency, to become fully familiar with local terrain; to locate existing shelter and to experiment with the means of shelter, such as light tents, which may be found suitable for the sustained field operations of military ski patrol units; to perfect an organization prepared to furnish guides to the Army in event of training or actual operations in the local areas; and to cooperate with and extend into inaccessible areas the anti-aircraft and anti-parachute warning services.⁵⁵

The War Department wanted local ski patrols to begin detailed reconnaissance of their assigned patrol areas. These patrols served two purposes. They were instructed to identify likely areas that would support either an enemy airborne insertion or the landing of enemy aircraft. Additionally, ski patrols were ordered to become the masters of their local terrain. They were to know the locations of river and stream crossing sites, locations of rural structures, and locations of terrain that would impede or facilitate troop movements. This information was to be cataloged and mapped by these local ski patrols. The War Department surmised that due to the unforgiving terrain where the ski patrols operated, they would be the best suited to act as local guides for the U.S. Army. If the need arose to conduct operations in defense of the country, the ski patrols would be the indigenous scouts that assisted the Army.

Nearly one year later, Dole received information from a General Staff liaison officer that the problem of training for mountain of winter operations had dropped in terms of priority. In fear that 15 months of hard work and determination had been lost in

⁵⁵ Letter "General George C. Marshall to Charles Minot Dole" November 9, 1940. Denver Public Library, Charles Minot Dole Papers Box No.7.

the bureaucracy in Washington, Dole and Morgan drafted a letter to General Marshall and the President outlining their concerns. They emphasized five main points:

1. That our northern boundaries are under snow at least four months of the year
2. That many countries in which fighting either offensive or defensive was then taking place under snow.
3. That Germany had 14 trained mountain divisions.
4. That there was anyone clairvoyant enough to foresee where or at what time of year we might be called upon to fight in offense or defense.
5. Our army is maneuvering extensively in the deep south at the hottest season of the year.⁵⁶

Dole's argument was to create a small experimental unit that at a minimum could at least test and train conceptual tactics and equipment. This pilot program provided the Army with a baseline capability and knowledge so that in the event that a need arose for mountain troops, the Army would avoid getting caught off guard.

Less than one month after sending his letter, he received a response from General Marshall. His response indicated that the Army was moving to establish a test unit for mountain and winter warfare training.⁵⁷ The Army announced on November 15, 1941, that the 87th Mountain Infantry Regiment was officially activated. Although well intentioned, Dole's letter was not the sole the reason for this event. By this time, the War

⁵⁶ Speech "Birth Pains of the 10th Mountain Division" Charles Minot Dole Papers, Denver Public Library, Box No.8, 3.

⁵⁷ Letter "General George C. Marshall to Charles Minot Dole" October 20, 1941. Denver Public Library, Charles Minot Dole Papers, Box No.7.

Department had been entertaining and experimenting with Dole's initial ideas for well over a year.⁵⁸ Divisions across the U.S. had conducted experimental training using skis and civilian purchased winter equipment. These tests had concluded that further testing and evaluation was needed if the Army planned to fight in the snow.

Additional factors also played a role in the War Department's decision to form the 87th Mountain Infantry Regiment. By September of 1941, Hitler had approved Operation Barbarossa and was ready to expand German domination further east into Russia. By November 15, 1941, the German Army was seeing the effects of operating in winter conditions with forces that were ill-equipped and prepared to operate in these conditions.⁵⁹ Although neither event was the specific driving force for continuing the venture of training alpine troops, Dole's letter and the recent struggle of the Germans on the Western Front added to the calculus of the War Department. Dole's letter is also another example of his passion and continued perseverance. It also indicates a high level of strategic thinking from someone outside of the military who hastily analyzed how the Army was preparing for war versus its opponents. This episode highlights Dole's desire to understand how he could integrate his knowledge and experience into the military's decisions and assessments of needed capabilities in preparation for the war. His perspective continued to provide a valuable and reasonable argument that was welcomed by most in the military and in Washington.

⁵⁸ John Imbrie, *Chronology of the 10th Mountain Division in World War II: January 6, 1940 – November 30, 1945* (National Association of the 10th Mountain Division, 2004), accessed May 4, 2017, <http://10thmntdivassoc.org/chronology.pdf>.

⁵⁹ Williamson Murray, *Military Adaptation In War: With Fear of Change*. (Cambridge, MA: Cambridge University Press, 2011), 129-135.

Recruiting

The ability of Charles Dole and the National Ski Patrol to evaluate and recruit qualified personnel for the War Department is one of the more unique and revealing episodes during the formation of the 10th Mountain Division. The creation of the 87th Mountain Infantry Regiment was a monumental win for Charles Dole and John Morgan. It provided a structure within the Army that was now required to train and fight in the terrain and weather that so much concerned them. However, as with any new capability or organization, initial progress was slow and full of challenges.

The efforts by Dole and the members of the NSP to recruit and assess volunteers for training as mountain soldiers was undoubtedly an arduous process. Nonetheless, it was one of the most fruitful and unique contributions made by the NSP. The process began once the War Department authorized the training and establishment of mountain units. However, the Army lacked trained and qualified personnel at the time to fill and organize these formations with quality personnel. Due to Dole's frequent interactions with important figures in Washington, Dole and the NSP were a natural choice to assist in the recruitment of highly qualified skiers, climbers, and outdoorsman to fill the ranks of what would eventually become the 10th Mountain Division. Dole had access to the right networks through the patrol chapters on the East and West Coasts, ski resorts, and the general winter outdoor sportsman network. The NSP operated under a contractual agreement with the War Department that involved the assistance in recruiting qualified individuals for service. This agreement first time the Army looked to a civilian agency to

assist with recruiting.⁶⁰ Dole and his organization led the effort to outfit the 10th Mountain Division with some of the most highly trained and educated volunteer soldiers in the Army. He was initially asked to produce 2,500 candidates in the first two months. In fact, the NSP exceeded this initial goal by almost a thousand.⁶¹ The NSP later conducted a second round of recruiting to bring in another 2,000 candidates, and although it would fall short to man the entire 10th Mountain Division with recruits the number and quality of individuals that were brought undoubtedly had an impact on the organization.

To meet these numbers, Dole and key figures within the NSP ran an innovative recruitment strategy. First, they culled their ranks and networks to find the types of people they knew would meet the requirements for mountain troops. Dole would formally write all the NSP chapters outlining the requirements for volunteers per the request of the War Department and the process that chapters would follow for accepting applications to join the mountain troops.⁶² Second, the NSP had to make people aware and interested in what the Mountain Troops were and what their mission was. Numerous newspaper and radio advertisements were used to cast the net wide to get their message out. Such ads were effective in bringing people in, as long as they ran in the right areas. Using a targeted approach to recruitment, the majority of newspaper and radio advertisements ran on the East and West Coasts where dense populations of skiers and

⁶⁰ Speech “Birth Pains of the 10th Mountain Division,” Charles Minot Dole Papers, Denver Public Library, Box No.8, 5.

⁶¹ Ibid.

⁶² Bulletin “The National Ski Patrol System: Consultant to War Department for the Selection of Specialized Personnel for Mountain Troops; Bulletin No. 10E5” September 15, 1943. Denver Public Library, Charles Minot Dole Papers, Box No.7.

winter outdoorsman resided. Dole also worked extremely hard to have ski troop equipment signed over to his chapters for mobile recruiting displays. Although, physically procuring the equipment from the Army was a feat in and of itself. Numerous leaders within the NSP agreed that the display of equipment was an effective means for attracting people with the right qualifications to join. At one point, Dole contacted an Army officer in the Utah Quartermaster Department that had access to the equipment the NSP needed.⁶³ In less than a week, Dole received a response that the requested equipment was being shipped out to the recruitment teams.⁶⁴ These efforts to showcase mountain soldiers and recruit highly qualified personnel was extremely innovative. Although the NSP did have some experience advertising their standard services to the ski industry, recruiting men for service in the Army was considerably foreign. However, their initial efforts proved extremely successful.

⁶³ Letter “Charles Minot Dole to Colonel L. O. Grice,” July 12, 1943, Denver Public Library, Charles Minot Dole Papers, Box No.7.

⁶⁴ Letter “Colonel L. O. Grice to Charles Minot Dole,” July 17, 1943, Denver Public Library, Charles Minot Dole Papers, Box No.7.

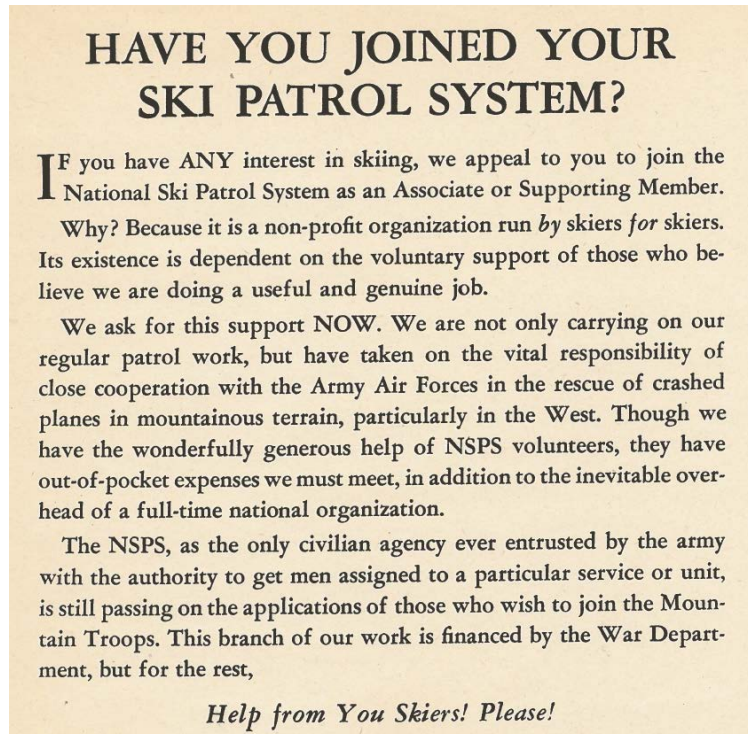


Figure 1. National Ski Patrol Recruitment Advertisement

Source: Charles Minot Dole Papers, Denver Public Library.

The application process initially outlined by the War Department consisted of a simple two-page application form. The intent of this form was to assist the NSP in screening individuals in a quick and expedited manner. The information contained on the application assessed whether or not the individual met the education and technical qualifications required for assignment to the mountain troops (See Appendix A for example application form).⁶⁵ Oddly, letters of recommendation were suggested but were

⁶⁵ Charles Dole, "National Ski Association of America, Bulletin No.10," Denver Public Library, Charles Minot Dole Papers, Box No.1.

not a requirement. Over time the application was revised to collect more information and to address the initial volunteer and enlistment intentions of the applicant.

The application evolved to meet the requirements of recruiting for the 10th Mountain Division and not just the soldiers of the 87th Infantry Regiment and the MTC. Additionally, three letters of recommendation became a requirement for application. Dole indicated that these letters slowly became the bane of his existence. This process to collect, review, and validate the quality of applicants for service was a massive undertaking by the NSP. The NSP accomplished something that would have been nearly impossible for the War Department. The War Department did not have the time to tackle such an endeavor in an effective manner. Arguably and understandably, mountaineering and skiing expertise was not something that resided inside the War Department. The individuals from the NSP reviewing the applications were subject matter experts in their own regard. Secondly, in many cases, applicant's qualifications and potential were verified through their letters of recommendation. In some instances, the position of the person writing the recommendation would speak for itself. Dole recounts one of his favorite letters of recommendation: "my nominee will not become lost if there is no sun to go by; he will not starve if he has not rifle with which to shoot game; he will not freeze if he has no cover and snow is on the ground. I know, for I taught him myself. Signed, His older brother Hiram"⁶⁶ In other instances, the quality of individuals were verified by a personal relationship with someone inside the NSP. In this regard, much of the vetting was done accurately and fairly efficiently (See Appendix A for a sample application and

⁶⁶ Speech, "Birth Pains of the 10th Mountain Division," Charles Minot Dole Papers, Denver Public Library, Box No.8, 5.

recommendation letters). In total, the NSP processed 12,055 applications of which 7,914 were eventually selected for service within the MTC and 10th Mountain Division between 1941 and 1945 (See Appendix B for a breakdown of applications reviewed).⁶⁷

The NSP recruited from a high-quality personnel pool. Firstly, having the time and the money to pursue outdoor hobbies in the early 1940s was not a standard affair. This select cross-section of American society had in part already achieved more than most everyday Americans. This success allowed them to pursue their ambitions for outdoor sports and recreation. Many individuals were college graduates. Many more had the resources necessary to become avid outdoorsmen and amateurs and in some cases, experts in the skills of outdoor winter recreation. This unique situation allowed the NSP to acquire highly educated and intelligent individuals for eventual service in the mountain troops.

For the most part, the education level of the Army made a significant increase from World War I to World War II. However, basic literacy was still a problem. In the six months leading up to the war, over 60,000 men who could not read or write were recruited into service.⁶⁸ The Army began to develop a system to categorize an individual's general intelligence and aptitude for learning using the Army General Classification Test (AGCT). The AGCT classified a Soldier into one of five grades based on their score. For inductees entering the Army in 1943, 6.4 percent fell into category I.

⁶⁷ Report "Analysis of NSPS Recruiting for Mountain Troops December 1941 – July 1945" Denver Public Library, Charles Minot Dole Papers, Box No.7.

⁶⁸ Gladys Bradley, "A Review of Educational Problems Based on Military Selection and Classification Data in World War II," *The Journal of Educational Research* 43, no. 3 (1949): 161–174, www.jstor.org/stable/27529124.

The majority of inductees, 78.2 percent were fairly evenly distributed between categories II, III and IV. Only 5.4 percent comprised the category V.

For the most part, individuals recruited by Dole and the NSP statistically outperformed the rest of the Army. The Army Ground Forces compared the AGCT scores of the 86th Mountain Infantry Regiment to the average distribution for the Army and the average scores of eleven divisions that were in service as of October 19, 1942.⁶⁹ At the time, a Soldier was required to have an AGCT score of at least 110 to qualify for Officer Candidate School. What the information in the above table indicates is that two out of every three Soldiers in the 86th Mountain Infantry Regiment was qualified to serve as an officer and the remaining third were qualified to serve as Non-Commissioned Officers based on their AGCT scores. A letter from an officer in the 86th Infantry Regiment to Dole further confirms the argument that the NSP recruited the highest quality of Soldiers for the Army:

You will undoubtedly be please to know that some of our oldest and most hard-bitten Regular Army Personnel are now frankly admitting that the best men we are receiving are the men that have been endorsed through the offices of the National Ski Patrol System....At first they were a bit apprehensive mainly on the ski angle, fearing that they would end up with a fancy collection of Lodge Skiers. But my own belief has surely been borne out, that out of the young sportsman skier group we are getting a better caliber, more intelligent, well-educated, group

⁶⁹ Charles Minot Dole Papers Box No.7, The information contained in this table is populated with data from an original copy of the "History of the Mountain Training Center" found at the Denver Public Library in the Charles Minot Dole Papers and appears to be an unedited version of the official version that was eventually published by the Army Ground Forces in 1948. Although there are only minor differences between the two versions of the tables. The data represented here was recorded at an earlier date.

of men that have a strong desire to be here, and are sufficiently versatile to take practically everything that the Army has to offer, in their stride.⁷⁰

Table 1. AGCT Scores 86th Mountain Infantry				
Class	AGCT Grade	Intended Normal Distribution (Percentage)	86 th Infantry Regiment (Percentage)	Average of 11 Divisions (Percentage)
I	130 and up	7	13	5.3
II	110-129	24	51	24.3
III	90-109	38	28	33.1
IV	70-89	24	5	24.8
V	69 and below	7	.5	12.5

Source: Created by author, data from “Army Ground Forces Study No. 24: History of the Mountain Training Center.”

The impacts that the recruitment of the NSP had on the overall capabilities of what would eventually become the 10th Mountain Division were fairly significant. The division would have struggled to effectively train on mountain and winter warfare tactics, inform equipment modifications and procurement and shape the writing of Army mountain doctrine without the expertise recruited by the NSP. If the Army had chosen to man the Mountain Training Center and the subsequent regiments within the 10th Mountain Division with regular Army recruits, the mountain training program would likely have struggled or even failed. Furthermore, the formation of a mountain division may have never come to fruition. Many Army recruits did not meet the demanding physical requirements that were required to operate under heavy loads, in high altitudes

⁷⁰ Report “History of the Mountain Training Center” Denver Public Library, Charles Minot Dole Papers, Box No.7.

for prolonged periods. Similarly, the athletic and physical ability to snowshoe, cross-country, and downhill skill would have taxed if not exhausted the everyday recruit. Even seasoned skiers and outdoorsman struggled to meet some of the physical demands that were placed on them at Camp Hale. Additionally, the overall intellectual capability of the NSP recruit played a large role in the Division's combat role in Italy. The impacts of having such a well-educated and intelligent formation are highlighted in this paper using the successes of the division during mountainous operations at Riva Ridge and Mount Belvedere. The ability for small units of Soldiers to think rapidly on their feet and confront challenging and complex problems played a large role in the division's ability to overwhelm and eventually defeat their German counterparts.

Equipment and Doctrine

For the U.S. military, doctrine and equipment are symbiotic. In general, if a new technology is developed and implemented on the battlefield that results in a significant advantage to the force with that capability, then doctrine at some point will be updated to account for this new capability. An example would be the U.S. Army's 1939 *Field Manual (FM) 100-5 Operations*. Although approved only in draft form in 1939, FM 100-5 tried to account for the changes that technology had brought to the battlefield. Although immature in detail, the FM 100-5 acknowledged the combined arms nature of warfare. It also outlined the integration of certain capabilities. For example, it looked at how the Army Air Corps was integrated on the battlefield.⁷¹ This approach is a reoccurring theme

⁷¹ Walter E. Kretchik, *U.S. Army Doctrine: From The American Revolution to the War on Terror* (Lawrence, KS: University Press of Kansas), 145-146.

through history of the U.S. Army. Concepts help drive how existing or future capabilities will be integrated on the battlefield. However, these capabilities must be employed in concert with the doctrine that provides the framework for military leaders to operate within.

For Dole and his NSP team, the challenges of equipment and doctrine or the lack thereof presented a unique challenge. To outfit mountain soldiers with the proper equipment, extensive research was necessary. As indicated earlier, Dole's first interaction with then CPT Gaither in Washington showed that the Army had not had put time or resources into addressing the issues of how to outfit winter mountain soldiers.

Acknowledging this shortfall, the Army looked to the NSP for assistance. Under the direction of General Marshall, two officers from the War Department were identified to liaise with the NSP.⁷² Dole inquired what the Army planned to use for equipment for the training of mountain and ski soldiers. The initial response was that the Alaskan equipment was the answer to address equipment issues. The "Alaskan Equipment" was a quartermaster depot supply catalog entitled *Alaskan Equipment, Revised Edition, August 1914*. Upon review of the contents, it was readily apparent that what was in the Army's supply inventory was dated and incompatible with conducting successful cold weather and mountainous operations.

⁷² Jay, "History of the Mountain Training Center," 6.



Figure 2. Alaskan Equipment Parka

Source: Illustrations of Alaskan Equipment, Office of the Quartermaster, 1914.

The two officers also attended a series of conferences between the National Ski Association and the National Ski Patrol where the issues of identifying proper winter and mountain equipment for the Army was being debated.⁷³ Out of these meetings a temporary equipment committee known as the Volunteer Winter Defense Committee was

⁷³ Ibid.

born.⁷⁴ This committee provided the civilian expertise to streamline the process of investigating available equipment and determining whether or not it would meet the Army's intended purposes. The topics discussed and the information presented during these meeting was acknowledged by the War Department and General Marshall as a tremendous help.⁷⁵ The outputs of these meetings provided excellent data to the War Department on the equipment and techniques required to conduct extended operations in the cold and snow. These initial interactions further proved the utility of leveraging the civilian expertise to assist the War Department in tackling the challenge of how to train and equip a force for mountain and winter warfare.

The Volunteer Winter Defense Committee quickly became heavily engaged. The committee consisted of many ski and winter experts to include Minnie Dole and John Morgan. The committee reported directly to the War Department to present its findings and information. At this point, it was clear to the members of the NSP and some personnel inside of the War Department that the equipment available in the Army supply system was substandard. The gear outlined in the *Alaskan Equipment* publication was the only equipment available for distribution by the quartermaster department at the time. The risk of putting mountain infantry soldiers in heavy, fur-lined, leather coats and obsolete ski equipment would be disastrous. Soldiers could not fight with this equipment against a well-trained and equipped enemy and hope to succeed.⁷⁶

⁷⁴ Ibid.

⁷⁵ Letter "General George C. Marshall to Charles Minot Dole," May 12, 1941. Denver Public Library, Charles Minot Dole Papers, Box No.7.

⁷⁶ Quartermaster Corps. *Illustrations of Alaska Clothing* (Washington, DC: Government Printing Office, 1914), 3-33. The equipment that is contained in the *Alaskan*

An additional issue that came to the attention of the committee was that commercial winter survival equipment such as lightweight stoves were not produced in the U.S. The small amount of equipment produced in the U.S. was made for civilian use and not of the rugged design required by the Army.⁷⁷ The committee also investigated the available foreign manuals on winter warfare at the time. They concluded that although some of the foreign techniques of fighting in winter and mountainous terrain were helpful, the terrain of the continental U.S. presented unique problems that did not allow for a simple adoption of a foreign military's doctrine.⁷⁸ An excerpt from the Army Ground Forces Study on the Mountain Training Center observed:

In the matter of shelter, for example. The European technique depended largely upon the existence of near-by huts, barns and farmhouses for overnight stays ... but they are not found on the American continent, especially in Alaska ... The Finns transported their equipment on horse-drawn sleds ... The Swiss even dug huge caves in their glaciers and cornices. No such procedures would work in the soft powdery snow and the road less mountains of the Western Hemisphere.⁷⁹

The work of the committee did not stop there. There was diminutive technical data available that provided the Army with analytical value for the procurement of different pieces of equipment.⁸⁰ Therefore, countless hours and test put forth by civilian physicists,

Equipment pamphlet does not include any technical data for the items that it contained. The fur lined parka in Figure 2 highlights the extent to which the Army prioritized the research and development of their winter equipment. Almost all equipment in the catalog appears to be intended to allow soldier to survive in extreme cold, but was substandard to attempt to fight or maneuver in.

⁷⁷ Jay, "History of the Mountain Training Center," 7.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Ibid., 8.

chemists, and engineers with a passion for the outdoors and winter sports provided the Army the data they needed to begin to field the appropriate types of equipment.⁸¹ Upon the completion of its work, the committee provided enough information that by the summer of 1941, the Army Quartermaster approved the specifications for the standard equipment list for mountain units. This list of approved items included many basic items from sleep gear to uniforms, boots, and ski and snowshoe equipment.⁸² This work along with the previously mentioned training of the divisions would encapsulate the defining moment where momentum to create a mountain warfare capability shifted in favor of the advocates such as Minnie Dole and John Morgan.

Conclusion

In conclusion, the work of Charles Minot Dole and John E. P. Morgan to influence the thinking of leaders in the War Department was critical to inform the decision to train for winter and mountain warfare. Additionally, the innovative techniques employed by NSP to recruit highly talented personnel proved invaluable. The ability to have accomplished skiers, mountaineers, and outdoorsman volunteer for service was immensely helpful in building capability that would have otherwise taken years to create. An added benefit was that the majority of these volunteers were physically fit and intelligent, qualities that proved necessary to subsequent challenges. The NSP also brought these men into service in an extremely fast and efficient manner. By using the social network of the NSP, potential recruits could be located, contacted, and verified

⁸¹ Ibid., 7.

⁸² Ibid.

through the application process at a pace that would have been unachievable by the War Department or the Army alone. This efficient and groundbreaking change to recruit the requisite talent into the Army was key. This recruitment provided the Army with the core group of men that built the capacity to train and develop equipment for mountain and winter warfare.

Additionally, the early research on equipment and doctrine by the NSP and the Volunteer Winter Defense Committee were innovative and imperative. The work done by these groups assisted in solving challenges for the War Department in an efficient and timely manner. It was only made possible by the assistance of experts that analyzed the available doctrine on foreign techniques for fighting in the snow and mountains to develop a concept for the U.S. defense. This research, coupled with the assistance to gather data and technical specifications for commercially available equipment, provided the Quartermaster with the information it needed to start the equipment procurement process. Although neither of these tasks was beyond the capabilities of the Army or the War Department, the NSP and the Volunteer Winter Defense Committee achieved excellent results in a short time. To achieve the same results, the War Department needed to divert significant resources and people that were not available. The most important aspect of the topics discussed in this chapter is that it highlights the earliest examples of how innovation drove the U.S. Army to look at the concept of developing a mountain and winter warfare capability. The processes for recruitment and equipment development did not follow normal procedural guidelines for the Army or the War Department. This created an unspoken acceptance to treat the development of this capability in a unique manner. Throughout this period, numerous amounts of red tape were cut to achieve fast

and quality results. This period established an innovative mindset for those involved with the creation of mountain and winter warfare training for the Army. This idea of innovation continued to permeate throughout the rest of the development and training period until the 10th Mountain's eventual deployment to Italy in 1945.

CHAPTER 3

THE TRAINING PROBLEM

It is my intention . . . to continue, accelerating where practicable, tests of food, clothing, equipment and transportation in order to standardize for the purpose the types best suited to operations under severe winter conditions. The campaign in Finland is being studied and should be of considerable assistance. Winter maneuvers, on a larger scale than yet attempted are desirable, but to date funds for this purpose have not been available.

— General George C. Marshall

Early Divisional Winter Training

The history of how men trained to become mountain soldiers is one filled with challenges, but it is also a period filled with groundbreaking stories of men who tackled a difficult and dynamic problem for the Army. The leaders and soldiers of the Mountain Training Center (MTC) and the Mountain Winter Warfare Board (MWWB) were pioneers for the Army. In the course of fewer than five years, the MTC and MWWB provided a core group of fairly well trained and equipped mountaineers that formed the nucleus of the 10th Mountain Division. This episode of history highlights another aspect of the peace-time innovations that occurred to create a new capability for the U.S. Army.

To understand the importance of the Mountain Training Center, you must also understand the innovative techniques and unique events that drove the U.S. Army to create such an organization in the first place. After Minnie Dole's initial engagements in Washington in early 1940, the War Department made the decision to leave multiple units in the northern U.S. snow belt to train on winter warfare. Although the U.S. Army was not completely unfamiliar with winter warfare it was unprepared and unequipped to train large organizations capable of conducting mountain operations. At this point, the Army

had only experimented with small-scale exercises that took place in Alaska and Washington State.⁸³ The intent, fueled by the messaging of Charles Dole was to inform the War Department of what was required to fight in this terrain in the event of a homeland invasion. “The purpose of the winter testing and training program in 1940-1941 was not to build up a combat force of ski troops, but rather to lay a foundation for future winter training.”⁸⁴ The assessment made by the War Department with the assistance of the NSP was that the U.S. Army was not prepared to fight in the northern mountainous regions of the U.S. The official order was sent out by the Secretary of War on December 5, 1940. It notified six divisions of their requirement to stay in the snow belt and train. These divisions were 1st Division at Fort Devens, Massachusetts, the 44th Division at Fort Dix, New Jersey, the 5th Division at Fort Custer, Michigan, the 6th Division at Fort Leonard Wood, Missouri, and the 3rd and 41st Divisions at Fort Lewis, Washington.⁸⁵ Each unit was given \$1,200 for the purchase of winter equipment such as skis, snowshoes, and tents. All equipment was to be procured locally and was to facilitate the training of living and conducting movement in winter conditions.⁸⁶ The War Department also notified each unit that representatives from the NSP would liaise with them to understand equipment and training issues.⁸⁷ Under this plan, each division

⁸³ Rottman, *US 10th Mountain Division in World War II*, 7.

⁸⁴ Letter “Honorable Robert P. Patterson, Under Secretary of War to Mr. Ernest M Hopkins,” 26 April 1941, in “Training in Mountain and Winter Warfare,” 3.

⁸⁵ Jay, “History of the Mountain Training Center,” 2.

⁸⁶ Ibid.

⁸⁷ Rottman, *US 10th Mountain Division in World War II*, 7.

worked with very generic and loose guidelines. The directive did not focus commanders on achieving quantitative or qualitative training results. Also, there was no directed end state. However, the training did allow for multiple units to conduct varying degrees of training and experimentation. This diversity in training led to a wide range of feedback from multiple units that addressed the problem in varying ways.

The 1st Division sent groups of 100 men from the 26th Infantry on a weekly basis to train at Lake Placid, New York. These groups of soldiers received intense ski instruction from former three-time Captain of the U.S. Olympic Ski Team Rolfe Monsen.⁸⁸ The unit trained close to one thousand men before the weather eventually warmed up. The training observations by the Commander of the 26th Infantry Colonel James T. Muir indicated that merely training soldiers to ski and snowshoe was a relatively simple process. However, he stated, “The major problems are those of supporting weapons, ammunition, evacuation, and supply.”⁸⁹ These observations indicate the early successes and failures of training for winter and mountain warfare. First, teaching soldiers to ski and snowshoe seemed a relatively simple process. However, only roughly 900 men were taught to train. This population pool was groups of hand-picked infantry personnel and did not account for soldier that were not as physically well-conditioned. Secondly, the training did not stress long movements at altitude nor did it attempt to execute any combined arms maneuver. The feedback also suggests that to have

⁸⁸ Jay, “History of the Mountain Training Center,” 2.

⁸⁹ Ibid., 3.

a fully functional winter warfare unit that adjustments were required to the Table of Organizational Equipment (TOE).

In the case of the 6th Division, one infantry company from the 1st Infantry and a composite company from the 20th Infantry trained at Fort Warren, Wyoming and one additional company trained at Fort Snelling, Minnesota. In this case unit integrity was maintained. However, a special ski patrol was formed from the units and was specially trained by a volunteer from the National Ski Patrol.⁹⁰ In contrast to the 1st Division, Major General C. S. Ridley, Commander of the Division made his observations for the War Department. In his suggestions, he indicated that there was no need for a TOE change. He recommended a ski platoon for each battalion with the general functions the same as a cavalry patrol. He recommended that all rifle infantry companies should be ski-equipped.⁹¹ He also concluded that training location was of utmost importance to properly train soldiers.⁹² These observations highlight the differences in opinion of how to train and employ winter warfare units. However, they are similar in regards to the time and effort required to train a soldier to ski or snowshoe.

Terrain and weather drove the focus of training for the 5th Division. The Division trained at Camp McCoy, Wisconsin and training focused on cross-country skiing. The findings were no different than much of the same training conducted on downhill skiing and snowshoeing. The Division surmised that soldiers could be trained fairly easily on

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Ibid.

cross-country, flat land movement.⁹³ However, the 5th Division report emphasized the importance of winter survival training. This focus on winter survival may have been indicative of the intense cold at Camp McCoy during the training, but it highlighted the importance of specialized training to avoid exposure to the elements in extremely cold conditions. The 44th Division also had similar training observations. They trained near the area surrounding Old Forge, New York and received instruction from a former Olympic skier from Norway, Pvt. Harold Sorensen.⁹⁴ The 44th experienced weather conditions of extreme cold and used this opportunity to test the capabilities of a multitude of equipment. The testing and reports that were compiled also highlighted the importance of winter survival training and the importance of winter gear selection.

Throughout this process, keen observations and new techniques were constantly being tried and tested to help the Army understand the problems of training for winter warfare. However, the most robust undertaking was by the 41st and 3rd Divisions at Fort Lewis, Washington. With the Cascade Range and Mount Rainer as their immediate backdrop only a few hours away, these two units had some of the most overwhelming weather and terrain with which to contend. The 41st Division specially selected a group of 25 men and 5 officers for the task of training as a ski patrol.⁹⁵ The instruction for training was given by a Sergeant, who had previous experience as a ski instructor from Montana. After approximately one month of intensive ski training, the patrol conducted a

⁹³ Ibid., 4.

⁹⁴ Ibid.

⁹⁵ Ibid.

validation movement exercise across the Olympic Mountain Range. This 40-mile trip through varying degrees of terrain highlighted the patrol's ability to move through harsh topography over a short period of time. Next, a two-week movement was conducted through the northern Olympic Mountains.⁹⁶ This movement was one of the most demanding exercises conducted at the time and highlighted to the War Department the impacts of extended operations in mountainous and winter terrain. The patrol resulted in equipment failures and an approximately 30 percent casualty⁹⁷ rate due to injuries and exhaustion. In a similar fashion, exercises were conducted by the 3rd Division by an 18-man unit around the base of Mount Rainer.

In the spring of 1941, the ski patrols were officially disbanded. They provided the initial data required to validate the possibility of training mountain warfare units. The observations indicated that the fairly rapid training of military skiers and snowshoers was possible. The reports indicated to the War Department that two months was needed to properly train. Also, an experienced instructor was necessary to ensure the proper use of equipment and techniques. Additionally, the location was a key factor in the unit's ability to properly train. This was highlighted by the observations that reinforced the importance of winter survival training. It emphasized the negative impacts on a formation that was not able to mitigate the risks associated with the cold weather. Without unforgiving mountainous terrain and extreme cold it would not be possible to adequately prepare soldiers or test equipment for the rigors of mountain combat. The training and

⁹⁶ Ibid.

⁹⁷ Ibid.

observations also indicated the civilian equipment that was available at the time was adequate for basic winter training. Nevertheless, this equipment began to fail as the duration and intensity of training were increased. These observations highlight the necessity for the War Department to create the Mountain Training Center and the Mountain Winter Warfare Board.

Ultimately, the observations and reports on the training that occurred in late 1940 and early 1941 informed the War Department on a variety of areas. It was now apparent that the geographic location for training was extremely important to facilitate training. This information began to shape what resources and equipment was needed to facilitate training. Finally, it gave The War Department an initial estimate of how long it would take to train mountain soldiers on the basics of skiing and snowshoeing. Although the initial divisions' winter training did not address many concerns such as mountaineering or ice climbing, logistics, medevac, indirect and direct fire employment or the integration of air support. It did provide a solid starting point for the War Department to begin to build mountain and winter warfare training capability. The strategy for training was also innovative. It took hundreds of inexperienced soldiers and quickly trained them on the basics of flatland and downhill skiing and snowshoeing. It highlighted the unique nature of how ski patrols should be organized and provided the initial test bed for equipment requirements. This training was accomplished in less than a seven-month period and at a small monetary cost. Additionally, it shortened any standard procurement timelines by leveraging the ability to quickly purchase locally furnished equipment in order to train.

The achievements of the early divisional training cannot be underestimated. From the fall of 1940 to the summer of 1941 the Army would achieve arguably one of the most

productive and innovative moments of developing mountain soldiers. The observations and feedback by commanders gave the War Department the initial footing it needed to move forward with a concept for developing a defensive, U.S. based mountain warfare capability. Although this focus would eventually shift to a deployable capability for use overseas, much of the data and observations was still valid. This information coupled with the simultaneous work of civilian experts and the NSP was crucial for the War Department. It led to the realization that the U.S. Army did not possess a concept for how to fight the Army in cold and mountainous terrain. This period highlights innovation by the War Department, the Army, and the civilian expertise of the NSP. It also provides the basis for the formation of the Mountain Training Center and eventually the formation of the 10th Mountain Division.

Construction of Camp Hale

During the summer of 1941, progress toward the formation of a mountain unit and the formation of a Mountain Training Center advanced but was deliberately slow. The Army saw the need for the capability, but it was slowly becoming more apparent that the employment of such troops was more likely overseas than in defense of the U.S. As early as December 1941, “it became apparent to all concerned that if Mountain Troops were to become an integral part of the Army, they would have to be trained quickly and in large numbers.”⁹⁸ Many factors played into how General Marshall would address the challenge of creating a unit capable of operating in winter and mountainous terrain. First, multiple ideas were discussed in the proper way to train mountain soldiers. Secondly, a debate

⁹⁸ Ibid., 27.

ensued on whether or not the Army actually needed mountain units versus training a standard triangular division to fight in the cold and mountains. Finally, resources were constrained. Manpower to build a cadre of instructors, availability of equipment to outfit the unit, and the resources available to select and construct a site to train all played a sizeable role in how fast the Army could develop a mountain warfare training capability.⁹⁹

In April 1941, there were two conflicting ideas in the War Department. The first was that of Colonel Orlando Ward, Secretary, General Staff that argued that soldiers could be moved to a location temporarily to train. This idea allowed multiple units near mountainous terrain to train for winter and mountain warfare and reduced the cost of purchasing land, constructing, and sustaining a large training site. Although this option reduced the resourcing requirements and gave multiple units some type of mountain and winter warfare capability, it did not clearly reflect many of the observations that were captured during the training the winter prior. The counter to this option was made by Colonel Harry Twaddle, Assistance Chief of Staff, G-3. His written response contained the following:

The training of units in mountain warfare by having such units move to suitable high mountain terrain and camp for short periods is a make-shift method and entirely inadequate ... Troops operating in mountains will normally encounter high altitudes, snow and low temperatures. They must be accustomed to life under such conditions. The camping problems alone are tremendous. Troops must actually live and train the year round under high altitude conditions if we are to

⁹⁹ Govan, "Training for Winter and Mountain Warfare," 4.

obtain any worthwhile results. There is no case where realism in training is more appropriate.¹⁰⁰

Although Colonel Twaddle's argument would eventually take hold, his immediate approval of a mountain training camp was denied until the Army could conduct further analysis on if a feasible location was even available. A report from the 5th Division Winter Training Board also supported Colonel Twaddle's argument. "The lesson is plain that preparation for winter warfare is not simply a phase of training that can be included at any northern station in divisional training but presupposes a form of warfare which requires the most careful planning, equipment and training at locations having suitable winter climate and terrain."¹⁰¹ This argument that was also echoed in the previous winter's divisional training won the day. It appeared that if the Army was going to train for mountain and winter warfare, it needed the right location and the right resources to sustain quality training.

Around the same time that Colonel Twaddle was arguing for the establishment of a training site, the War Department ordered a site survey conducted by the US Army with help from the forestry service.¹⁰² The site survey considered many factors, the majority of these factors were identified during the divisional training exercises in the winter of 1940. The Army and its leadership recognized that altitude of at least 9,000 feet above sea level

¹⁰⁰ Memorandum "For the Secretary General Staff, April 17, 1941: Subject: Establishment of Command Post for a Division in High Mountain Terrain." In "History of Mountain Training Center," 9.

¹⁰¹ Memorandum "For the Chief of Staff, April 28, 1941. Subject: Winter Warfare Training and Equipment." In "Training in Winter and Mountain Warfare," 3.

¹⁰² Rottman, US 10th Mountain Division in WWII, 10.

and proximity to mountainous terrain was vital. Additionally, the site needed to support winter maneuvers, artillery employment, and living space for 20,000 soldiers. With this large of a footprint, logistics were also a concern. The site needed access to rail and fresh water also.¹⁰³ These requirements narrowed the list to three locations. Eventually, the site at Pando, Colorado was recommended. The Pando Valley floor sat at 9,200 feet and could support the footprint of a triangular division. The annual snowfall started in October and lasted until June there was access to highway, rail and electricity and the nearby Eagle River offered access to clean water.¹⁰⁴ The Corps of Engineers voiced the only negative argument for this location. Their two main concerns were that the cantonment area was too small to house a full division and they felt that the ability to divert enough clean water and properly dispose of sewage was questionable.¹⁰⁵ Although, their concerns were considered, Pando still offered the best location for training. In April of 1942, construction on Camp Hale began. Camp Hale's construction progressed over the course of the seven months and finally met its initial operating capability on November 16, 1942. America finally had its first mountain warfare training center facility.

This episode highlights the challenges faced by the Army and how it addressed the site selection for specialized training. Although this period is not extremely innovative in nature, it addresses a major material and organizational challenge for the

¹⁰³ Jay, "History of the Mountain Training Center," 27.

¹⁰⁴ *Ibid.*, 28.

¹⁰⁵ *Ibid.*

Army. It displays how the Army did in fact take an incremental approach to address the problem of training and leveraged multiple different sources of information to eventually make the best decision for how and where to establish a mountain training center. The Army could have simply decided to ignore the requirements for altitude acclimatization, snow fall, and climate considerations. Not taking these variables into account would have greatly reduced the capability to train properly. Some arguments were made that the initial living conditions at Camp Hale were meager. Basic needs such as laundry and recreational facilities were not present during its initial occupation.¹⁰⁶ However, over time, things began to improve, and the site offered the capacity needed to sustain the soldiers during their training. In light of some shortcomings, Camp Hale's site location offered the most realistic and challenging terrain to build mountain and winter warfare capability. However, its location and the criteria considered would not have been possible without the divisional training exercises in 1941. The feedback from these exercises and the work of the NSP helped define these requirements for the Army. Without these observations and the help of the civilian expertise of the NSP the selection of a proper training site was unlikely.

The Mountain Training Center and the 87th Mountain Infantry Regiment

While the Army was tackling the early problems of training and equipping mountain soldiers, it was also slowly building the organizational structure of the first

¹⁰⁶ Ibid., 38. For more information on the area surrounding Camp Hale and the lack of local recreational outlet available to the soldiers see Rene Coquoz, *The Invisible Men on Skis: The Story of the Construction of Camp Hale and The Occupation by the 10th Mountain Division 1942-1945* (Boulder, CO: Johnson Publishing Company, 1970).

experimental mountain unit. The 87th Mountain Infantry Regiment was activated on November 15, of 1941 and formed the initial test unit for the Army. It assisted in establishing training plans and creating the institutional knowledge on mountain and winter warfare training that would inform the establishment of the Mountain Training Center (MTC) in 1942.

Concurrently, the Mountain Winter Warfare Board (MWWB) was established as a small functional team as part of the 87th Regiment to test mountain and winter equipment for the Army. Following nine months of training at Fort Lewis and Mount Rainer, LTC Rolfe was promoted to Colonel. He then took command of the Mountain Training Center at Camp Carson, Colorado in September of 1942. Simultaneously, a detachment of the most experienced skiers and mountaineers was hand-picked from the 87th Regiment at Fort Lewis to help augment the cadre at Camp Hale the following month in November.¹⁰⁷ The remainder of the 87th then deployed to Hunter Liggett to conduct exercises in preparation to augment an amphibious task force that would eventually take part in the assault on Kiska Island in 1943.¹⁰⁸ As of December 1942, the 86th Mountain Infantry Regiment assumed the role of the primary training unit at Camp Hale Colorado.¹⁰⁹

¹⁰⁷ Imbrie, Chronolgy of the 10th Mountain Division in World War II, 5.

¹⁰⁸ Jay, "History of the Mountain Training Center," 27.

¹⁰⁹ Although the 87th Mountain Infantry Regiment was the nucleus of the initial test bed for mountain warfare training, they were ear marked to assist in the assault on Kiska Island in August of 1943. The most experienced skiers and mountaineers would be transferred to the 86th Mountain Infantry Regiment in order to help the formal establishment of the Mountain Training Center at Camp Hale. The 87th Mountain

The 87th and the MTC tackled large issues for the Army. They developed the first mountain and winter warfare training, tested experimental equipment, and provided mountain and ski experts to fill the ranks of the 10th Mountain Division. Over the course of two years, the MTC, MWWB and the 87th was innovative in almost everything they did. The guidance provided by the Army was vague and facilitated the exploration of new ideas and concepts. The two years examined here highlight innovation in training, recruitment of personnel, testing of equipment, and development of new doctrine for the Army.

The 87th Mountain Infantry was commanded by Lieutenant Colonel (LTC) Onslow S. Rolfe at Fort Lewis Washington from November 1941 to September 1942. LTC Rolfe had no previous experience of any sort in winter or mountain warfare, and the four officers initially assigned to his command had some training with winter operations but none were experts.¹¹⁰ The first soldiers that arrived at the unit consisted of men with previous mountaineering or ski experience that were already in the Army. All other members that came to the 87th were volunteers that were assessed and recruited by the NSP.¹¹¹ This created a unique dynamic whereby the officer cadre of the 87th were at a

Infantry would eventually return to Camp Hale in February of 1943 and be reintegrated into the 10th Mountain Division.

¹¹⁰Govan, "Training for Winter and Mountain Warfare," 5.

¹¹¹ Jay, "History of the Mountain Training Center," 12.

significant disadvantage regarding knowledge and experience on winter and mountain operations in comparison to their enlisted men who were truly the experts in their field.¹¹²



Figure 3. Soldiers Teach Officers to Ski

Source: History of the Mountain Training Center, Charles Minot Dole Papers, Denver Public Library Box No.7.

¹¹² Private Olaf Rodegaard instructs LTC Newman in the correct use of wax on skis, Mount Rainer, February 1942. In “The History of the Mountain Training Center,” Charles Minot Dole Papers, Denver Public Library, Box No.7.

In the first few weeks at Fort Lewis, LTC Rolfe realized that his mission was broad. The Army Ground Forces outlined the training for all divisions. However, the 87th Regiment encountered a unique problem.¹¹³ The mission of the 87th Mountain Infantry as directed by the War Department was to:

develop the technique of mountain and winter warfare and to test the organization and equipment and transportation of units operating in mountainous terrain at all seasons and in cold climates in all types of terrain . . . to function under conditions imposed by cold weather and mountainous terrain in accordance with training doctrine and technique described in Sections VI and VII, Chapter 12, FM 100-5 (FSR Operations 1941) and FM 31-5 (Operations in Snow and Extreme Cold).¹¹⁴

Their mission was intentionally vague and presented a concern for LTC Rolfe. He was unsure of whether he was to build a mountain unit for combat or if he was creating a cadre that would eventually train other units on the techniques of mountain warfare.¹¹⁵ Additionally, the challenge of training mountain troops in the low rainy flat lands of Fort Lewis was unsatisfactory. After hastily organizing the unit, LTC Rolfe rented Paradise and Tatoosh ski lodges at the base of Mount Rainer to begin their mountain training. The lease was organized to support training until June.¹¹⁶ Sustainment was brought daily from Fort Lewis, and the beginnings of mountain training were underway. LTC Rolfe and his

¹¹³ Greenfield, Palmer, and Wiley, *United States Army in World War II: The Army Ground Forces; The Organization of Ground Combat Troops*, 4.

¹¹⁴ Memorandum "War Department Directive AG 320.2, November 15, 1941. Subject: Constitution of 87th Infantry Mountain Regiment and Activation of 1st Battalion." In "The History of the Mountain Training Center," 22.

¹¹⁵ Jay, "The History of the Mountain Training Center," 22.

¹¹⁶ *Ibid.*, 16.

mountain soldiers now had an appropriate location to train. The next step was figuring out how to train and how to assess the training.

The first large task was to establish guidelines for what the standard of military skiing would look like and how to train it. An instructor school was hastily organized and a standard was established. The focus for military skiing would address movement carrying a heavy load and an emphasis on safety and endurance.¹¹⁷ The only hindrance was that no blank ammunition was permitted for training near Mount Rainer and only through special permission were the men of the 87th allowed to carry their empty rifles during training.¹¹⁸ For the next eight weeks, the men trained on military skiing. At the conclusion, each Soldier was required to run through a military ski qualification course. The course was two miles in length over varying terrain with graders positioned throughout. At the conclusion, each skier was graded and presented a skier identification class based on the results.¹¹⁹ This initial training period for the 87th Regiment marked a significant achievement not only for them but also for the Army. In a letter dated April 28, 1942, COL Rolfe wrote Major General Mark W. Clark stating that “I do not believe I have ever seen a better group of physically trained men in my life.”¹²⁰ COL Rolfe also indicated in an interview that the training that occurred during that period created one very strong observation. Many soldiers in the unit had significant civilian ski experience.

¹¹⁷ Ibid.

¹¹⁸ Ibid., 22.

¹¹⁹ Ibid., 21.

¹²⁰ Ibid.

However, very little of their civilian ski methods translated to military skiing. Moving not only downhill but also cross-country with a weapon and pack changed how techniques were developed and used.



Figure 4. Working with Artillery in Deep Snow

Source: History of the Mountain Training Center, Charles Minot Dole Papers, Denver Public Library Box No.7.

The next major milestone for LTC Rolfe occurred after the initial training phase at Mount Rainier. Working through a contact in the Army Ground Forces staff, LTC Rolfe arranged to have all of his soldiers that applied and were accepted to Officer Candidate

School (OCS) returned to the 87th Regiment at the conclusion of their training.¹²¹ This was and still is unique. The Army has a long-standing tradition that newly appointed officers that graduate from OCS do not return to their previous unit of assignment. This enhanced LTC Rolfe's ability to retain the invaluable expertise of his mountain leaders. His efforts were reinforced by the massive recruitment drive that was being run by the NSP. In managing personnel, it was extremely clear to LTC Rolfe that not just any soldier could be assigned to his command. In a letter dated April 28, 1943 to Major General Clark, LTC Rolfe stated "Men must have the aptitude for the work and the physical coordination. . . . We have found that you cannot take just any trained infantryman and make him a skier or a mountaineer."¹²² This requirement plagued the training capability of the MTC and 87th Regiment throughout 1942 and 1943. Numerous individuals recruited by the NSP arrived at LTC Rolfe's command with an excellent mountain or skiing background, but with no basic training.¹²³ This deficiency in training forced the 87th Regiment and the MTC to have a special replacement training center to establish a baseline aptitude for infantry skills.¹²⁴ These soldiers had to be trained on basic infantry skills before they could train in an intensive, high-altitude mountain

¹²¹ Ibid., 23.

¹²² Letter "Colonel Rolfe to Major General Mark W. Clark, April 28, 1943." In "The History of the Mountain Training Center", 23. In "Training in Mountain and Winter Warfare," 8.

¹²³ Jay, "The History of the Mountain Training Center," 63-64.

¹²⁴ Interview "Historical Officer with Captain John Woodward of the Mountain Training Center Staff, January 1944." In "The History of the Mountain Training Center," 23.

training program. This problem was only further troubled by the fact that the AGF training directives were predicated on a unit getting all of its personnel at once.¹²⁵ For the LTC Rolfe and his cadre, they steadily received a constant stream of replacements, making the ability to increase training readiness across the force even harder.

Balancing the manning requirements for cadre and resources to do this was a huge challenge for LTC Rolfe. Eventually, many AGF policies for training were changed or modified to meet the requirements of training mountain soldiers. In an observation made in February of 1943: “Many enlisted men have been received who are physically unqualified for this type of service . . . personnel with certain physical qualifications should be recognized and plans originated to secure this type.”¹²⁶ However, the establishment of special physical qualifications was established but was not approved until June of 1943.¹²⁷ Therefore, replacements routinely either lacked training or the physical capacity to complete training. This shortfall indicates a failure of higher headquarters to understand the impacts of sending unqualified men to the MTC was having. This lack of understanding impacted the ability of the MTC and the 10th

¹²⁵ Letter “General McNair to Mr. John C, Case, 7 July 1943.” In “The History of the Mountain Training Center,” 63.

¹²⁶ Memorandum “Major Jake Tappin, G-3 Army Ground Forces Special Projects Branch, for Chief of Staff Army Ground Forces February 17, 1943. Subject: Observations during Visit to MTC 4-12 Feb 43.” In “The History of the Mountain Training Center,” 58.

¹²⁷ Letter “President of the Board, Headquarters 10th Medical Battalion (Mtn) to Commanding General MTC, February 17, 1943. Subject: Qualification Requirements for Mountain Troops.” In “The History of the Mountain Training Center,” 50.

Mountain Division to maintain training momentum. Soldiers constantly arrived and departed due to their inability to meet the physical demands of training.

Outside of the personnel issues, the 87th Regiment at Fort Lewis and the Mountain Training Center at Camp Hale both devised innovative ways to train. Much like the development of the military ski qualification test the Army had no doctrine to drive training requirements and no standardization to develop and assess training. Additionally, Colonel Rolfe's supervisors were entirely clueless and therefore struggled to provide him guidance or recommendations on his plan. After repeated attempts for advice, COL Rolfe was told to "proceed as he saw fit, saying that they knew nothing about the development of the mountain troops and not propose to try and interpret his mission."¹²⁸ Therefore, it was on the shoulders of COL Rolfe's cadre at both Fort Lewis and Camp Hale to develop the requirements and assessments.

At Fort Lewis, a summer climbing school was built to practice on climbing techniques. Three thirty-foot climbing walls were erected out of logs in an old sand and gravel pit. The logs had notches cut into them for hand and foot holds and the soldiers were taught general mountaineering technical work to include the use of ropes, pitons, and rappelling. The instruction on these topics was given by two climbing experts, Sergeant Walter Prager and Corporal Hal Burton.¹²⁹ Additionally, there was a need for ice climbing instruction however funds and resources were unavailable. To mitigate this training shortfall, a team of soldiers traveled to Mount Rainer to film and capture

¹²⁸ Interview "Historical Officer with Brigadier General Rolfe, 7 Jan 1944." In "The History of the Mountain Training Center," 22.

¹²⁹ Jay, "The History of the Mountain Training Center," 26.

photographs on ice climbing techniques. This media was then used back at Fort Lewis as a formal block of classroom instruction and proved beneficial in creating a baseline of knowledge for the soldiers.¹³⁰

Once the MTC was established at Camp Hale, training progressed well. However, this mission was still vague. Even by 1943 there was still no specificity on where the Army planned to employ their mountain-trained soldiers. Colonel Rolfe identified that each theater of operation presented its unique set of geographical problems for mountain operations.¹³¹ Therefore the mountain training was always kept general versus ultra-specialized. The MTC established a cadre of over 300 men to train the influx of new recruits arriving from across the Army and from the recruitment efforts of the NSP. The lessons learned from the training at Mount Rainer the year prior began to quickly pay off, and multiple military ski qualification courses were established for the training of new arrivals. Also, a military mountaineering school was established to train soldiers on the fundamentals of rock climbing. Once complete, soldiers then trained on ice climbing. This training was facilitated by the innovative idea of constructing an artificial glacier.¹³² The glacier was constructed by continually pouring water over a packed snow base for a period of time and allowing it to freeze. These two types of instruction culminated in what was known as the Mountain Obstacle Course and was used to assess soldier

¹³⁰ Ibid.

¹³¹ Interview “General Rolfe with the Historical Officer, March 1943.” In “The History of the Mountain Training Center,” 42.

¹³² Jay, “The History of the Mountain Training Center,” 70.

performance at the end of both training phases.¹³³ Training was also conducted on various techniques to support sustainment operations. All training was new and highly experimental. The use of pack animals, sled dogs, and the use of the T-15 and M-29 snow tracked vehicle were just a few of the techniques tested.

Evenings contained hours of classroom instruction ranging from medical evacuation procedures over snow to basic rock and ice mountaineering courses. Every program was designed and built from scratch to provide soldiers with the basic skills needed to operate and survive in winter and mountainous terrain. Each training program was executed by the cadre while balancing requirements to train basic infantry tasks for new recruits as well.¹³⁴ The eventual outcome was that the MTC ran two innovative and comprehensive training programs with minimal resources and personnel. However, it was still unable to achieve levels of acceptable unit readiness. It was nearly impossible to have consistent collective training progression with the cadre requirements to run the MTC and the constant influx of new personnel. Much training was focused at the individual level to build the basic infantry and specialized mountain skills for each soldier.

The MTC used innovative and creative training strategies. Nevertheless, the shortfalls of adequate numbers of personnel to support the staff and cadre of the MTC prevented achieving momentum. This personnel shortage coupled with the requirements to train on both mountain and basic training tasks impeded the MTC's ability to produce

¹³³ Ibid., 73.

¹³⁴ Memorandum "Colonel Onslow Rolfe for GNHIS, December 12, 1947. Subject: Report on Activities of MTC." In "Training in the Ground Army 1942-1945," 8.

highly trained cohesive units. Instead of units being capable of executing large-scale training maneuvers, they were filled with a rotating pool of men trained at varying levels. This failure was officially recognized during observations made by Army Ground Force (AGF) and NSP observers during the first collective training exercise in February of 1943. The test unit for this AGF directed exercise was the 2nd Battalion 87th Mountain Infantry with appropriate enablers and attachments.¹³⁵ The first day of the training the soldiers moved out of Camp Hale and were immediately presented with blizzard conditions and temperatures averaging ten below zero. The battalion immediately suffered 25 percent casualties due to frost bite, exhaustion, and altitude sickness.¹³⁶ Although the majority of personnel were new and inexperienced soldiers the exercise was canceled. The remainder of the time was spent with AGF and NSP observers perfecting winter survival techniques and testing equipment and resupply techniques.¹³⁷

Many observations explained the contributing factors to the ultimate failure of this first exercise, but two remain the most apparent and relevant. First, even the most experienced men were unprepared to conduct extended maneuvers in the field. This outcome was likely a symptom of how much focus had been placed on training individual tasks to new arrivals and the use of experienced men as cadre. It was unlikely given the shortages in experienced officers and leaders that the cadre could have been managed any other way. In a memo written by Brigadier General (BG) Rolfe, he stated that he was:

¹³⁵ Jay, "The History of the Mountain Training Center," 46.

¹³⁶ Govan, "Training for Mountain and Winter Warfare," 8; Jay, "History of the Mountain Training Center," 47.

¹³⁷ Jay, "The History of the Mountain Training Center," 47.

aware that the program of training was not far enough advanced to prepare the men for a field exercise in midwinter. They were also aware that errors and hardships would occur because many of the enlisted men had not completed their basic training. It was impractical to make up a special task force composed only of the experienced troops. Yet it was necessary to conduct the exercise.”¹³⁸

This was a low point for the MTC and the soldiers of the 87th Mountain Infantry.

However, it did highlight the challenges that the leadership faced at Camp Hale. This event spurred additional resources to be allocated to the MTC. It also caused COL Rolfe to reorganize key personnel on the staff. This event also provided necessary feedback to change some of the aspects of the training program. The MTC placed more emphasis on understanding the impacts of soldier load and more instruction and training were executed for extended operations in extreme weather. These changes only improved the quality of the training conducted at Camp Hale. The soldiers ultimately trained at the MTC became the most experienced and highly trained soldiers within the 10th Mountain Division.

The MTC continued its mission until the activation of the 10th Mountain Division at Camp Hale, July 15, 1943. All personnel with the exception of roughly 100 soldiers were assigned to the 10th Mountain Division. The remaining men now became part of what was known as the Mountain Training Group (MTG). This group of experienced instructors provided resident expertise to continue to train members of the 10th Mountain Division and also provided an exportable training capability. Throughout 1943, the members of the MTG trained mountaineering, skiing and winter warfare techniques to various units all over the U.S. Their final task was likely the hardest, but in the end, they

¹³⁸ Ibid., 48.

provided world-class training to the 10th Mountain Division, multiple other divisions, and separate units across the Army.¹³⁹

Mountain Winter Warfare Board

The testing of mountain and winter warfare equipment occurred as early as April 1941.¹⁴⁰ These early tests provided invaluable data for the Army but were executed as single isolated events with different groups of experienced personnel. The Mountain Winter Warfare Board (MWWB) was established to create a more streamlined and structured process for this testing and evaluation. The board was created in conjunction with the 87th Mountain Infantry at Fort Lewis. The board eventually moved to Camp Hale alongside the MTC on October 2, 1942.¹⁴¹ The initial board consisted of four officers and a recorder.¹⁴² The mission of Mountain Winter Warfare Board was “to test and develop mountain and winter equipment and formulate, develop and recommend changes in mountain and winter warfare doctrine.”¹⁴³ Without the MWWB, the proper equipment and doctrine would have never been properly developed for the soldiers of the 10th Mountain Division. However, scarce resources and a lack of specific guidance forced the personnel on the board to innovate relentlessly.

¹³⁹ Ibid., 112-115.

¹⁴⁰ Ibid., 8.

¹⁴¹ Ibid., 37.

¹⁴² Ibid., 29.

¹⁴³ Letter “War Department AG 320.2, November 15, 1941. Subject: Constitution of the 87th Mountain Battalion and Activation of 1st Battalion.” In “Training in the Ground Army 1942-1945,” 7.

To support the task of developing and testing new equipment, the MWWB was involved in numerous special training missions. One of the first of these events was in the spring of 1942. The Quartermaster General's Office had requested that various pieces of equipment be tested for worthiness in severe winter and mountain conditions. The MMWB formed a team of eight specialty selected personnel lead by Captain Jackman. The team planned to attempt to summit the 14,408-foot peak of Mount Rainer. A summit had never been successfully done during this time of year due to dangerous ice conditions.¹⁴⁴ For this first mission, the team was given dehydrated rations, stoves, clothing, sleeping bags and tents to test. There was so much equipment that a group of 50 men from the 87th Mountain Infantry Regiment were utilized as porters. All gear was moved up to the team's base camp at roughly 10,000 feet before the porters were released back to their unit. At this point, the expedition began their testing. Numerous key observations were made during their time at the summit. First, it was determined that men needed to consume nearly three quarters of a pound of sugar daily to keep their energy levels up. The standard ski tent that was accepted by the Army failed miserably. Its zippers broke in extreme cold and the interior would condensate and freeze. Additionally, the team learned that cooking times for food doubled because of the need to melt snow for the dehydrated rations.¹⁴⁵ Although there were increased cooking times, the expedition found the food to be excellent. These rations eventually became the standard

¹⁴⁴ Jay, "The History of the Mountain Training Center," 75.

¹⁴⁵ Ibid., 76.

mountain ration for the Army.¹⁴⁶ The team also developed a technique for trail marking. Each member assisted in placing painted willow wands at an interval of 120 feet apart. The team commented that at high altitude and in extreme weather conditions, these markers meant the difference between life and death. They are critical for either follow-on forces to know where a proofed and safe trail exists. Additionally, they provided a marked route for the proper evacuation of injured personnel. The observations and data recorded during this experimental expedition provided invaluable data and feedback to the Army.

Due to the success and excellent feedback of this first expedition, the Army immediately tasked the MWWB to execute a second expedition. This time, a team was sent to Alaska to conduct a summit of Mount McKinley and the surrounding area for test experiments. In contrast, this expedition was a joint expedition that involved Army personnel and a group of experienced mountaineers from the American Alpine Club. The team has had representation from the U.S. Army Medical, Signal, and Quartermaster branches. The purpose of this second test was two-fold. The Air Force needed data on conducting air delivery operations in snow and extreme cold. They also wanted to evaluate emergency equipment designed for downed aircraft pilots. Additionally, the Army Quartermaster wanted to make final adjustments to their latest group of Artic

¹⁴⁶ Report "Captain Jackman, 87th Mountain Infantry Regiment to the Commanding General Army Ground Forces, June 20, 1942. Subject: Report of Mount Rainer Test Expedition." In "The History of the Mountain Training Center," 75-76.

Clothing. This equipment was going to be issued to the Army for use the winter of 1943.¹⁴⁷

The testing for this expedition occurred at three different test areas that ranged in altitudes from 10,000 to 17,800 feet. There was varying terrain, weather, and temperatures. These areas offered the most extreme temperature, weather, and terrain in the United States. The expedition much like the first assessment tested the limits of the men and their equipment. The testing was such a priority that as men made observations in the field, data was being immediately relayed back to Washington to effect immediate changes to equipment.¹⁴⁸ One example pertained to the Army's new design for a mountain boot. Over the first four days and less than five miles of movement, the boots destroyed men's feet. Back in Washington, the design was immediately changed and undoubtedly "saved many men . . . from equally painful feet."¹⁴⁹ At the conclusion of the testing, reports were written up by each member. This data was immediately flown back to Washington, so the changes and adjustments could be made before issuing the equipment for the upcoming winter training. This unique mission, like many of the MWWB's missions, was filled with innovation. Army and civilian expertise was leveraged to conduct training at a remote location, under severe conditions to make immediate changes to new equipment for the Army.

¹⁴⁷ Jay, "The History of the Mountain Training Center," 77.

¹⁴⁸ Ibid.

¹⁴⁹ Robert Bates, "Mount McKinley 1942," *The American Alpine Journal* (1943): 1, accessed May 15, 2017, <http://publications.americanalpineclub.org/articles/12194300100/Mt-McKinley-1942#>. This was a quote from Captain Bates, a member of the test team during an interview on the work done in Alaska.

Back at Fort Lewis, extensive training and testing were occurring on over-snow vehicles.¹⁵⁰ One of the biggest concerns for the AGF leadership was adequate transport to support a mountain troops. The vehicle had four requirements. First, it needed to be light enough travel in deep snow. It had to have enough engine power to pull heavy payloads and transport personnel. Finally, it needed to be air transportable.¹⁵¹ The Studebaker Corporation volunteered to build a prototype known as the T15 for the Army. This time a team of 50 men and 3 officers from the 87th Mountain Infantry Regiment formed a test team. The mission was to test this new vehicle in the inaccessible ice fields of the Saskatchewan Glacier.¹⁵² Over the next several months tests and modifications were made to the vehicle. This design led to an evolution of vehicles that was ultimately accepted and produced for the Army as the M28 and M29 “Weasel”. A total of 4,476 M29s were produced in 1943. The 10th Mountain Division received 500 vehicles to augment the Division’s wheeled transport capability.¹⁵³ This experiment conducted by the MWWB had a profound impact on the innovation of equipment for the 10th Mountain Division and for the Army.

The MWWB was also involved with developing equipment and training for the use of aerial tramways in the mountains. For this special mission, a group of approximately 30 men was put together to work with the Army Corps of Engineers at

¹⁵⁰ Jay, “The History of the Mountain Training Center,” 42.

¹⁵¹ Ibid., 78.

¹⁵² Ibid.

¹⁵³ Thomas Brooks, *Tenth Mountain Division* (Paducah, NY: Turner Publishing Company, 1998), 17-18; Rottman, *US 10th Mountain Division in World War II*, 45.

Aspen, CO.¹⁵⁴ Again, testing was conducted at altitudes above 10,000 feet and in harsh mountain terrain. After weeks of experimentation, it was determined that engineers could train standard infantry units on how to properly build and maintain simple cable aerial tramways in the mountains.¹⁵⁵ Understanding how to properly employ this capability created an invaluable asset for the mountain soldiers. Having the ability to ferry casualties and supplies across expansive rugged terrain could give a unit a distinct advantage once the high ground was secured. It allowed units to diminish resupply times, solider loads and improve the chances of survival for soldiers wounded in action.

The MWWB did not solely focus on equipment, they also played a key role in the development of mountain and winter warfare doctrine. In the absence of Army standards, the MTC with the heavy lifting of the MWWB created the enduring foundation for Field Manual (FM) 70-10 *Mountain Operations*, published in 1944. There was no doctrine to start from other than Field Manual 31-15 *Operations in Snow and Extreme Cold*. This manual did little to aid the tactics of how BG Rolfe envisioned how a mountain formation was to fight. It was the challenge of the MTC and the MWWB to take the standard infantry doctrine available at the time and apply it to mountain operations.¹⁵⁶

Additionally, the MTC established numerous non-standard training programs for mountain training. These included but were not limited to the construction of an artificial glacier to train ice climbing, the erection of climbing walls to train on belaying

¹⁵⁴ Jay, "The History of the Mountain Training Center," 79.

¹⁵⁵ Ibid.,

¹⁵⁶ Ibid., 83.

techniques and the creation of a mountain obstacle course and military ski qualification course.¹⁵⁷ Moreover, the testing, evaluation, and development of all mountain and winter warfare equipment were conducted under the supervision of the MWWB and also under the command of BG Rolfe. The achievements made by the MTC and the MWWB were innovative in every way. Nothing that the MWWB did was standard Army practice. In fact, in many instances, key leaders in the War Department had to “cut the red tape” to streamline processes. Additionally, the reliance on civilian expertise had a tremendous impact on the quality of assessments produced by the various special missions that the MWWB executed. One extremely unique and compelling aspect of what the MWWB did was that it was by the soldier and for the soldier. There is a positive organizational impact in terms of trust and confidence when you know that the equipment, clothing, and rations that are being issued to you have been developed by the men you fight and train beside.

Conclusion

The history of the Mountain Training Center and the 87th Mountain Infantry is a unique and compelling story. It shows how the Army leveraged innovative ideas to create new training techniques and developed new equipment to create new capabilities. Without the early involvement of the leadership of Charles Dole and the innovative strategy by the Army to test multiple divisions in ski patrolling, it is unlikely that a formalized process for mountain and winter training would have materialized. The way in which the Army chose to equip and gather observations from the multitude of varying locations and units was not only unique but provided the required data to support the

¹⁵⁷ Ibid., 70-74.

specialized training of mountain troops. Once the 87th and eventually the MTC were established processes were refined and improved over the course of two years. Although the MTC was presented with many challenges the work of the NSP and the leadership of BG Rolfe ultimately produced some of the most highly trained, best equipped, intelligent, and physically fit soldiers in the Army. From the initial days of renting of ski lodges at Mount Rainer to the establishment of new mountain and winter equipment, military skiing and mountaineering standards, the MTC paved the way for mountain warfare training. The leadership and staff of the 87th and the MTC were given an ambiguous mission with no doctrine. They had little resident expertise on winter and mountain operations at their onset. By eventually leveraging the experience of the men recruited by the NSP and internally managing personnel talent, the MTC was able to establish a highly skilled cadre that then formed the backbone of mountain experts for the 10th Mountain Division. The task to establish a winter and summer mountain training program while also managing a replacement basic training center was a daunting task. However, the staff and leadership of the MTC balanced both requirements, while inventing new ways to train on tasks the Army had never executed before.

The establishment of training aides to facilitate new types of training, such as the artificial glacier at Camp Hale or the wooden climbing walls at Fort Lewis clearly show how resourceful and keen the men of the 87th and the MTC were. Personnel and fiscal resources were constrained throughout the process. This problem of resourcing was further complicated by a lack of understanding at multiple higher headquarters. The lack of liaison between echelons was one of the primary reasons for this. Higher echelons did not appreciate or understand the challenges faced by BG Rolfe and his team. There were

only a few instances where leaders physically came to see how the unit was training and it was only then that some problems were alleviated. However, in some instances these constraints and challenges compelled leaders and soldiers to innovate. They continued to applying new and creative ideas to challenging situations. In ten months, the Mountain Training Center's achievements were numerous and unprecedented. It developed and achieved things that were a first for the Army. The men and equipment that were the products of this training and experimentation were the key ingredients that made the 10th Mountain Division the highly adaptive unit that it was.

CHAPTER 4

THE 10th MOUNTAIN DIVISION

On July 15, 1943, the 10th Light Division (Alpine) was officially activated at Camp Hale and was commanded by BG Lloyd E. Jones. The Division consisted of three infantry regiments, the 85th, 86th and 90th regiments.¹⁵⁸ The Division also consisted of three artillery battalions. However, these battalions consisted of 75 millimeter (mm) pack howitzers instead of the 105mm and 155mm pieces found in a normal division.¹⁵⁹ Additionally, an antiaircraft artillery machine gun battalion, a motorized engineer company, pack mule transportation along with light wheeled and tracked motorized transport also comprised the division.¹⁶⁰ The division was directed to test the organization and equipment for employment in mountain warfare and to attain ultimate combat efficiency in mountain warfare.¹⁶¹ This initial mission would challenge the newly formed division staff and subordinate units. Until this point, large-scale collective training had not been a priority at Camp Hale due to an undermanned staff, cadre, and competing requirements. The division would spend the next year building on some of

¹⁵⁸ The 90th Infantry Regiment would stand up but would later be relieved from assignment to the 10th Mountain Division and move to Camp Carson. The 87th returned to Camp Hale in January of 1944 from their operations in the Aleutians, clearing Kiska Island.

¹⁵⁹ Rottman, *US 10th Mountain Division in World War II*, 21.

¹⁶⁰ Thomas Govan, "The History of the Tenth Light Division (Alpine)" (Study No. 28, Washington, DC: Historical Section – Army Ground Forces, 1946) 1.

¹⁶¹ Report "First Draft: History of the 10th Light Division." Eisenhower Presidential Library, 10th Mountain Division, Box No. 822.

those lessons learned to meet the requirements presented by the Army and to validate the concept of a division-sized mountain unit. It was this training and organization along with the two years of hard work and innovation that led to the early success of the division in Italy. The division capitalized on the years of experimentation and innovation to increase collective training readiness and then rapidly adapt to their new environment in northern Italy. The combined adaptations to tactics, equipment, and their organization to overwhelm the German defenders was critical to break the stalemate of the northern advance of the U.S. 5th Army.

Training the Division for War

Personnel turnover was one of the biggest challenges the division faced. It mirrored a standard light infantry division table of organization for personnel. To meet the numbers of personnel required the division was filled with replacements. Over 30 officers and 2,000 enlisted men were brought in to fill the shortages in the division. Then the expertise that resided in the 86th Mountain Infantry Regiment and the former members from the MTC were spread across the division. The command spent the first week and a half reorganizing units to ensure that every unit had some mountain expertise in its ranks.¹⁶² However, this resident experience did not mitigate the large amounts of new personnel and turn over.

The arrival of replacements put all of the units at various levels of training proficiency. This problem was compounded by the fact that new arrivals continued to

¹⁶² Govan, "The History of the Tenth Light Division (Alpine)," 5.

trickle into Camp Hale instead of arriving in large batches.¹⁶³ New arrivals constantly arrived unsuited physically for the rigors of high mountain training and in most cases, were reassigned outside of the division.¹⁶⁴ Problems with officer turn over were also an issue. The Division received numerous orders to furnish officers to AGF replacement depots.¹⁶⁵ Therefore, the units constantly struggled to keep their formations properly manned and trained. It was not until March 22, 1944, that the 10th Division finally reached full strength.

The personnel turn over had a tremendous impact on training readiness as well. Much like the MTC, the 10th Division was required to train basic infantry skills for new recruits and still manage specialized mountain training.¹⁶⁶ It was also required to focus on collective level training. The division adopted the training structure formed by the MTC. It utilized a formal cadre and school to train in both areas. Also, within the first week of the activation a board consisting of field grade officers was established to recommend a directive for squad and platoon collective training for the division.¹⁶⁷ Additionally, the new leadership and staff was given instruction on mountaineering and winter techniques. This training was conducted to educate them on the techniques and capabilities expected of soldiers in their unit. The 10th Division then received guidance from its headquarters

¹⁶³ Ibid.

¹⁶⁴ Ibid., 4.

¹⁶⁵ Ibid.

¹⁶⁶ Ibid., 5.

¹⁶⁷ Ibid.

on expectations for upcoming training. The 11th Corps Headquarters directed two training periods. The first period was from August 15, 1943 to January 8, 1944. This period allowed the units to focus on individual and collective training in preparation for larger combined operations. The second window from January 10, 1944 to March 31, 1944 was to focus on exercises and maneuvers that supported the initial mission given to the 10th.¹⁶⁸

Over the course of the next year, the division continued to train and develop its techniques and increase its training readiness. Its soldiers were outfitted with the most current mountain and winter equipment and clothing in the Army supply system.¹⁶⁹ There was little to no equipment shortages and therefore the division could focus on how to use and employ what they had. During the first training period, the first division level field exercise was conducted. This first large scale movement of the division seven miles into a 2,000-foot climb identified issues and challenges with sustainment. It was determined that the pack animals struggled to keep up on icy sections, which then naturally slowed down the movement of the entire division column. Additionally, the cadre identified and that the transportation in the division was inadequate to conduct timely ammunition resupply.¹⁷⁰ In February of 1944, the combined arms training began for the division. This

¹⁶⁸ Memorandum "Headquarters XI Corps to Commanding General 10th Mountain Division, AG 353. Subject: Training of the 10th Light Division (Alpine), August 11, 1943." Eisenhower Presidential Library Collection of Military Records, 1918-1950 Series III Box No.3.

¹⁶⁹ Memorandum "War Department AG 322. Subject: Organization of the 10th Light Division, July 22, 1943." Eisenhower Presidential Library, Collection of Military Records, 1918-1950, Series III, Box No.3.

¹⁷⁰ Govan, "The History of the Tenth Light Division (Alpine)," 7.

period consisted of a six-week cycle that required four to seven nights a week in the field. The second six-week period, consisted of one two-week exercise and one three-week exercise. This second period, three-week period was known as the “D-Series” exercise.¹⁷¹

D- Series was the first test to validate the division’s ability to conduct large-scale operations in winter and mountain terrain. The first night of the exercise the temperature dipped to thirty-five degrees below zero. The exercise tested the individual and collective training of the men and the capabilities of their equipment. Units were required to move their personnel and equipment over unforgiving terrain while addressing a series of field problems along the way. One soldier commented “There are ten thousand versions of the D Series . . . No one who took part in those maneuvers will ever forget them.”¹⁷²

Although the unforgiving weather and terrain resulted in men evacuated for frostbite and snow blindness, the exercise displayed that the soldiers could endure and operate in harsh conditions for extended periods of time.¹⁷³ The division started the exercise with 9,296 personnel. In total over 1,300 soldiers were evacuated at one point during the exercise. The majority of evacuees were due to frostbite and general injuries sustained while training. Of this total number, over 50 percent were returned to duty before the conclusion of the exercise, which left an effective strength of 8,673 soldiers that finished

¹⁷¹ Ibid., 8.

¹⁷² Harris Dusenberry, *Ski The High Trail: World War II Ski Troopers in the Colorado Rockies* (Portland, OR: Binford and Mort, 1991), 13.

¹⁷³ Brooks, 10th Mountain Division, 24.

training.¹⁷⁴ This number of medical evacuations indicates the harshness of the weather and the terrain, but also shows the division's ability to sustain combat power in the harshest of conditions.

The exercise was controlled by umpires. The umpires assisted in evaluating the units and controlling the exercise. The observations from the exercise gave the division a good evaluation. It also gave the division's units an opportunity to validate their tactics, certify their leaders and validate their distribution of equipment. However, the division was still not where the Army wanted it. In a report by the observers to the Army Chief of Staff, they recommended changes to the equipment and organization to something similar to a regular division. The challenges of sustaining a force in this kind of harsh terrain needed a stronger logistics and supply backbone.¹⁷⁵ For many soldiers following the D-Series exercise, it seemed that their future was still uncertain.

The recommendation from the D-Series exercise started a series of decisions that lead to the division heading to Camp Swift, Texas. The soldiers were required to acclimatize and were issued the initial order to prepare for the Louisiana Maneuvers. During this period morale sank as rumors circulated that the 10th Division was transitioning to a standard division.¹⁷⁶ At one point, maps of the Burma area were handed

¹⁷⁴ Report "Causalities During "D" Series." Charles Minot Dole Papers, Denver Public Library, Box No. 7.

¹⁷⁵ Brooks, 10th Mountain Division, 24.

¹⁷⁶ Ibid., 25.

out for leaders to study. This event made morale fall even further.¹⁷⁷ Many wondered why the division was not being given the chance to deploy and fight. Some rumored that commanders had no requirement for the division. However, an interaction between General Marshall and Charles Dole quickly clarified the lengthy delay. Dole recounts a personal conversation with General Marshall. When he inquired why the division had not been deployed General Marshall replied:

You must remember, however, I only have on mountain division. If I commit them at point X and two months later it turns out I need them much worse at point Y, problems of transportation are so great I can't get them there. That is why I have had to hold them in reserve. . . If I had a winter trained mountain division in Italy during the winter of 1943, the entire Italian campaign might have gone differently. The largest center of communications that the Germans had was just on the other side of Cassino. With a mountain division I could have wiped it out, but as it was we were held up for 17 days by heavy snows and couldn't move.¹⁷⁸

This conversation indicates that the decision to employ the 10th Mountain was reserved by the Chief of Staff and did not indicate a lack of faith in the division's capabilities.

After less than 90 days at Camp Swift, the operational situation had changed in Northern Italy. The U.S. Fifth Army had made progress but began to culminate as the winter season began. Units were stretched from their railheads and advance bases for logistical support. Although they had prepared for the mountains, the operational demands in November and December 1944 exceeded what was anticipated by Allied

¹⁷⁷ Rottman, *US 10th Mountain Division in World War II* 21; Tom Brooks, 10th Mountain Division, 25.

¹⁷⁸ Speech "Untitled." Charles Minot Dole Papers, Denver Public Library, Box No. 7.

planners.¹⁷⁹ At this point, General Marshall made the decision to not convert the 10th Mountain into a standard division, but instead ordered the increase in its manpower and equipment to ensure it could fight in the mountains. The division received more than 2,000 personnel while at Camp Swift. Each infantry battalion stood up a heavy weapons company and the division was augmented with an additional 5,000 mules.¹⁸⁰ This number of mules would exceed the total number of pack mules that were in support of the entire Fifth Army in late 1944.¹⁸¹ This priority for resourcing was a definitive indicator that the Army was finally preparing the 10th for combat. On November 6, 1944, the 10th Light Division was reorganized as the 10th Mountain Division. The division was finally officially recognized as a mountain unit after the four long years of trials, experimentation, and challenges.

This section provides context to understand the transformation and challenges that occurred for the 10th Mountain Division from 1943-1944. It highlights the challenges faced by the division's leaders and soldiers. The 10th Mountain never had a clear mission for which to train. However, the division continued to evolve and train into a large, effective, fighting formation, one that would prove immediately invaluable to the U.S. Fifth Army in northern Italy.

¹⁷⁹ Fisher, *United States Army in World War II: The Mediterranean Theater of Operations; Cassino to the Alps*, 411.

¹⁸⁰ Brooks, *10th Mountain Division*, 25.

¹⁸¹ Fisher, *United States Army in World War II: The Mediterranean Theater of Operations; Cassino to the Alps*, 414.

Following the official designation as a “Mountain” division. The 10th Mountain received a new commander. BG Jones had become increasingly ill with a respiratory infection and was replaced by Major General (MG) George Price Hays. MG Hays, a field artilleryman of renown had served with the 3rd Infantry Division in World War I. He was awarded the Congressional Medal of Honor for his actions in France, July 15, 1918.¹⁸² Prior to the second war breaking out, MG Hays served in the War Plans Division in the War Department. In 1942, he commanded the 2nd Infantry Division Artillery. He arrived at Omaha Beach at D-Day plus one day. He was then tasked with commanding the 34th Division Artillery in Italy. He supported one of the most intensive mountain assaults the U.S. Army had conducted this far in Italy. He would support the 34th Division’s assault in the area of Monte Cassino. The 34th would experience the challenges of fighting a well-trained German force in mountain terrain.¹⁸³ The mountain division was about to receive the right leader for their new mission. MG Hays was an experienced combat veteran, who had most recently observed the challenges of mountain warfare and the capabilities of the enemy that the division was going to face.

¹⁸² Citation for MG Hays actions reads “At the very outset of the unprecedented artillery bombardment by the enemy, his line of communication was destroyed beyond repair. Despite the hazard attached to the mission of runner, he immediately set out to establish contact with the neighboring post of command and further establish liaison with 2 French batteries, visiting their position so frequently that he was mainly responsible for the accurate fire therefrom. While thus engaged, 7 horses were shot under him and he was severely wounded. His activity under most severe fire was an important factor in checking the advance of the enemy.” Webmaster, “Recipients: George Price Hays,” Congressional Medal of Honor Society, accessed April 27, 2017, <http://www.cmohs.org/recipient-detail/2537/hays-george-price.php>.

¹⁸³ Dominick Graham, ed. *Cassino: Ballantine's Illustrated History of the Violent Century; Battle Book No. 16*, ed. Barrie Pitt and David Mason (New York, NY: Ballantine Books, 1970), 53-66.

Arrival in Italy

The 10th Mountain Division's success in early 1945 highlights the successful and extremely quick adaptation of the division in combat. The division's first operation was executed successfully by launching a large-scale frontal attack against an enemy occupying the high ground. In the months prior, the U.S. 5th Army made three failed attempts to dislodge the enemy. The U.S. 5th Army was preparing for a spring offensive by reconstituting the force when the 10th Mountain Division arrived. The 10th Mountain was given the initial mission to attack the German defenses and retain the high ground. With its success, the 10th Mountain Division led the rest of 5th Army north, ultimately achieving success in every subsequent operation until the war's end. The division's operation in February of 1945 highlights the ability to adapt. With the lack of a theater specific mission and the numerous changes that occurred at Camp Swift, the Division came into theater with only the expertise of their commander and their training. Upon their arrival in Italy, soldiers and officers needed to adapt their organizations and equipment for the fight that now confronted them.

In December of 1944, the U.S. Fifth Army had reached a stalemate with their German opposition. The priority for the Army was to regroup and resupply the Army.¹⁸⁴ 5th Army was operating on a 5,000-mile logistical line of communication that extended from the U.S. across the Atlantic Ocean and over mountainous terrain to arrive at the

¹⁸⁴ United States 5th Army, *Fifth Army History*, vol. 8, *The Second Winter* (Washington: Government Printing Office, 1947), 30-32.

front lines.¹⁸⁵ Many units were exhausted from the previous falls fighting in harsh weather and the rugged terrain. Artillery stockpiles desperately needed to be replenished, and units were in need of replacements.¹⁸⁶

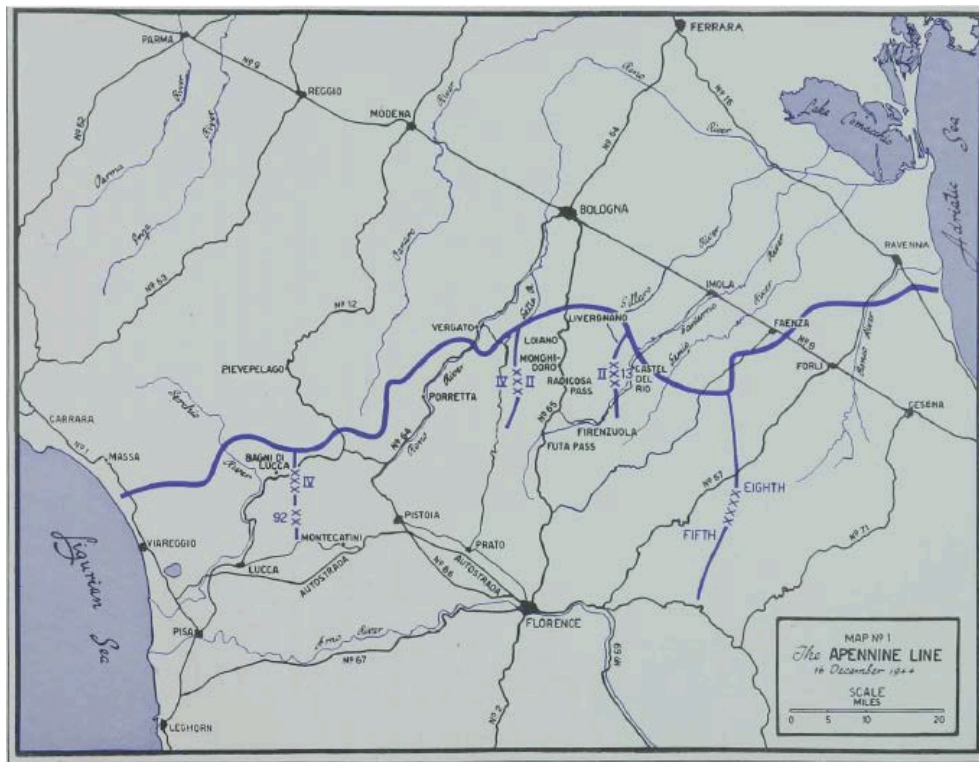


Figure 5. Allied Disposition in Italy 1944

Source: History of the 5th Army: Volume 8; The Second Winter

The general disposition of forces in Italy was the U.S. Fifth Army occupied the western portion of the Italian peninsula. In December 1944, the Army's boundary

¹⁸⁵ Fisher, *United States Army in World War II: The Mediterranean Theater of Operations; Cassino to the Alps*, 414-415.

¹⁸⁶ *Ibid.*, 417.

stretched from the Ligurian Sea to the east to the Senio River. The British 8th Army occupied the right flank of the U.S. 5th Army and owned the eastern half of the peninsula. The only way for both armies to move north to Bologna was through the Po River Valley via Highways 12, 64 and 65. Unfortunately for the Allies, the high ground over watching these routes was occupied by German defenders. The plan for the spring offensive, named Operation Encore, was to conduct a double penetration by both the U.S. 5th Army and the British 8th Army to break out to the north.¹⁸⁷ In December of 1944, 5th Army was at a geographical disadvantage. To the immediate north was a large valley floor and Highway 64. Highway 64 was the key route for the allies to be able to continue their movement north. Without securing Highway 64 and the valley, there would be no way to move logistics and armored formations further north. Further north, the Germans occupied the high ground and were oriented south. By occupying Mount Belvedere (3,736 feet)¹⁸⁸ and Mount Gorgolesco, they had total observation of Highway 64 and the valley floor in front of them.¹⁸⁹ To the north and west of the 5th Army front, the Germans also occupied the Mount Pizzo Di Campiano Ridge. This ridge, also known as Riva Ridge, provided the Germans with a commanding position that allowed them to employ direct and indirect fires into the valley floor from the west. The ridge consisted of ten

¹⁸⁷ William Herrington, "Operations of the 10th Mountain Division on Mount Belvedere, February 16-26, 1945." (Paper, Fort Benning, GA: Advanced Infantry Officers Course 1949-1950), 5.

¹⁸⁸ Ibid., 6.

¹⁸⁹ Ibid., 5.

mountain peaks that ranged from approximately 3,100 to 6,100 feet.¹⁹⁰ For the 5th Army, the seizure of Mount Belvedere and Mount Gorgelesco was critical to begin to move north into the valley floor below. However, based on the last three failed attempts, it was made clear that to move north, Riva Ridge first needed to be seized.¹⁹¹

By January 28, 1945, the entire 10th Mountain Division had finally arrived in the IV Corps sector of the 5th Army area of operations. The division was assigned to Task Force (TF) 45 under control of IV Corps. MG Hays recommended that to seize Mount Belvedere, Riva Ridge needed to be scaled and secured first. Nothing this daring had been attempted by any units of 5th Army. The division organized to execute their mission to attack, seize, organize, and defend the Mount Belvedere high ground.¹⁹² Once the high ground was seized, the rest of 5th Army would then move northward to continue to pressure the German defenders and move toward Bologna.¹⁹³

¹⁹⁰ The summits on Riva Ridge from north to south were Pizzo di Campiano 3,175 ft., Mount Cappel Busso 3,800 ft., Mount Serrasiccia 4,600 ft., Mount Riva 4,672 ft., Mount Mancinello 4,800 ft., Cingio del Bure 4,628 ft., Le Piagge 4,900 ft., Serra dei Baichetti 4,350 ft., Cingio Sermidiano 5,400 ft., and Mount Spigolino 6,030 ft. Harris Dusenberry, "Report of LTC Hampton on the Riva Ridge Operation" in *The North Apennines and Beyond*. (Portland, OR: Binford and Mort, 1998) 179.

¹⁹¹ Dusenberry, *The North Apennines and Beyond*, 180.

¹⁹² *Climb to Glory: WWII 10th Mountain Division in Italy*, directed by The United States Army (Army Pictorial Center, 2015), DVD (The Historical Archive New Media, 2015), 16:20.

¹⁹³ Fisher, *US Army in World War II: The Mediterranean Theater of Operations; Cassino to the Alps*, 424-426.

Riva Ridge and Mount Belvedere

The general scheme of maneuver for the division was to conduct frontal attacks sequentially. The first attack on Riva Ridge was planned to take place 24 hours prior to the attack on Mount Belvedere. The 1st Battalion of the 86th Mountain Infantry Regiment was selected to conduct the assault on Riva Ridge. Once the ridge was seized, the 85th and 87th Infantry Regiments were required to seize the eastern and western sides of Mount Belvedere. The Division had approximately two weeks to rehearse and prepare for the operation.

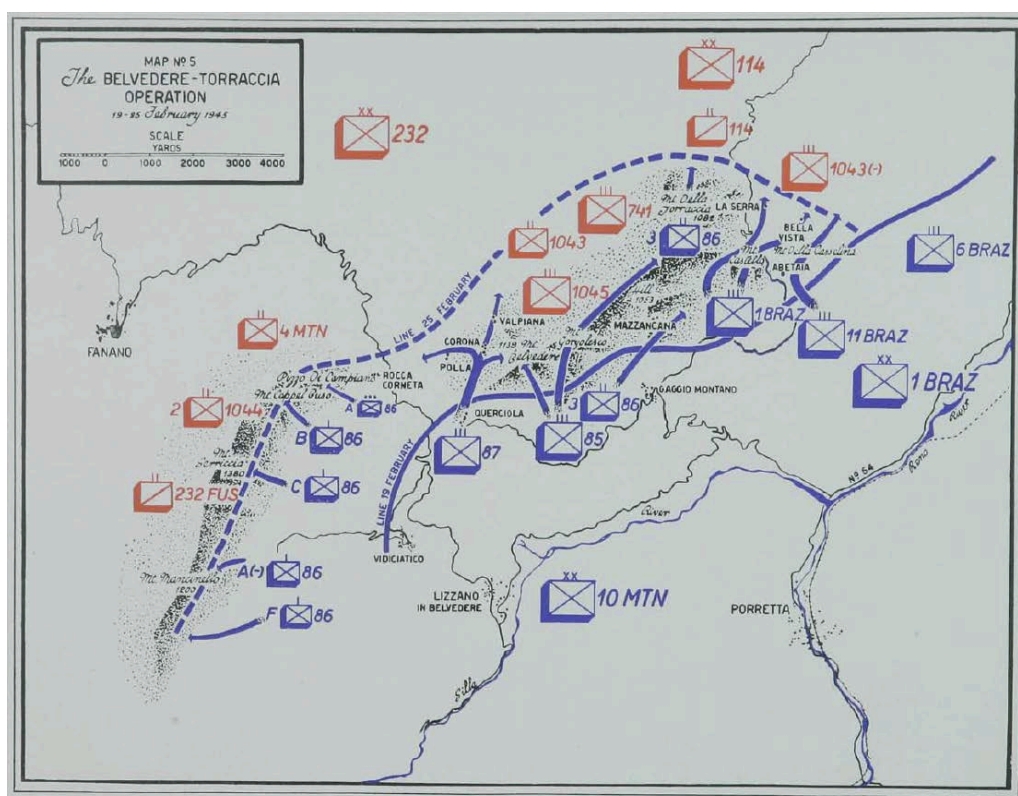


Figure 6. Riva Ridge and Mount Belvedere Operations Map

Source: Fifth Army History. Vol. 8, *The Second Winter*.

In the two weeks leading up to the attack, adaptations were made by units and leaders in the division. As more intelligence was collected on the terrain and the enemy units, leaders and soldiers understood the importance of adapting their techniques. As noted by LTC Hampton, commander of the 1st Battalion, 86th Infantry Regiment there was no patrolling or ground reconnaissance of Riva Ridge by the previous unit.¹⁹⁴ Since the objective area spanned eight kilometers and contained 10 different peaks, it was necessary to gather as much intelligence on the terrain and enemy locations as possible. The 1st Battalion immediately began to conduct reconnaissance and surveillance patrols. It was identified that the average gradient for Mount Cappel Buso was about 30 degrees and the Mount Serrasiccia was around 40 degrees.¹⁹⁵ This steep terrain characterized much of the eastern portion of the ridge. This presented the most unique challenge for the 1st Battalion of the 86th Mountain Infantry Regiment. Patrols began to understand the terrain in detail and assess the enemy's composition and disposition.

Movement around the terrain was initially an issue. However, the men of the 86th Regiment began to employ their skiing techniques for movement to the ridge. Once they arrived at a final concealed location they dismounted to make initial contacts with the enemy. Each patrol assisted in building their intelligence picture. In January, these patrols identified a total of five trails. Patrol leaders assessed that each trail could support the movement of the companies in the battalion.¹⁹⁶ Each approach to Riva Ridge was

¹⁹⁴ Dusenberry, *The North Apennines and Beyond*, 181.

¹⁹⁵ *Ibid.*, 179.

¹⁹⁶ *Ibid.*, 186-187.

numbered and then the terrain and enemy situation was developed for each route. This intelligence was critical to how the battalion task organized its capabilities for the eventual attack. Certain companies needed more rope and climbing assets as they faced more sheer rock and cliffs. Other companies required pioneer squads to support the building of hasty bridges over terrain to support the movement of large numbers of personnel.¹⁹⁷ Each of these examples shows how intelligence was shaping how the units changed and adapted their techniques and organizations to meet the threat. The division identified four enemy battalions defending the Riva Ridge and Mount Belvedere area. There were an additional four enemy battalions in reserve and a total of eight three artillery pieces were located.¹⁹⁸ Although the intelligence was not perfect the soldiers of the 10th Mountain were starting to understand that they were in for a fight.

¹⁹⁷ Ibid., 184.

¹⁹⁸ Herrington, "Operations of the 10th Mountain Division on Mount Belvedere, February 16-26, 1945," 9.



A winter patrol in the Belvedere sector . . . painted by Technical Sergeant Savo Radulovic

Figure 7. Mountain Soldiers near Belvedere

Source: United States 5th Army. Fifth Army History. Vol. 8, The Second Winter.

As intelligence continued to come in from the front, preparations were constant and non-stop. Large sand tables were built using aerial imagery and the ground intelligence reports to facilitate briefs and rehearsals.¹⁹⁹ At one point in early February, the majority of the 1st Battalion 86th Infantry was pulled off the line to conduct rehearsals. During this time, the battalion intelligence officer with a platoon of men continued to patrol the approaches and communicated updates back to the rear. This

¹⁹⁹ Ibid.

allowed for the companies conducting preparations to get daily information on the status of enemy and terrain in each of their respective areas.²⁰⁰ The accuracy of the intelligence and the time to conduct thorough orders briefs and rehearsals were critical to the success of the Riva Ridge operation. Understanding the plan at the lowest level was achieved through continued rehearsals and constant preparation.

During this time, leader's observations and soldier's experiences were driving adaptation all over the battlefield. Patrols quickly established that moving through open terrain was not possible under observation of the enemy. Wooded areas that would have normally offered concealment had been shelled repeatedly. This shelling left the wooded areas littered with branches and debris that made maintaining noise discipline impossible. Since maintaining secrecy was of the utmost importance during these reconnaissance efforts, patrols used the rocky ravines to move at night. It was the only terrain that visually helped hide the patrol and masked their noise during movement. However, moving in this unforgiving terrain amplified the need for physically capable soldiers.²⁰¹ Men started to adapt their equipment as well. Techniques such as wrapping boots in burlap sacks to avoid slipping were found more useful than attempting to attach the issued snow cleats to boots.²⁰² Adaptations to how communications equipment was employed also occurred. In the example of wire communications, soldiers began to tie knots in the wire at 100-yard intervals as the patrols moved toward their objective areas.

²⁰⁰ Dusenberry, *The North Apennines and Beyond*, 183.

²⁰¹ Report "Army Ground Forces Intelligence Division Report A310: Patrol Operations Under Winter Conditions." Combined Arms Research Library N-8390.

²⁰² *Ibid.*

This provided everyone in the patrol with an accurate idea of how far the patrol had moved and how close they were in proximity to the enemy locations. Additionally, the lines provided helpful in guiding patrols back once the reconnaissance was completed.²⁰³ The division also began to experiment with the use of searchlights in the distance at night to help illuminate the difficult terrain. This provided the patrols with just enough ambient light to move slowly through rugged terrain without giving away their locations.²⁰⁴ These are just a few of the many adaptations that began to occur before the first major operation in February 1945. The men of the 10th Mountain Division were using their combat experiences to adapt their techniques that they had rehearsed state-side in an organization that encouraged creative techniques and valued the judgment of the soldiers on the ground.

The division was finally ready for its first major offensive. It integrated all of the lessons learned over the previous month to launch its first of many successful operations in Italy. On February 15, 1945, the 10th Mountain Division received the order to detach from TF 45. The Division resumed operations in their sector under IV Corps control. MG Hays indicated that the division was capable of attacking by February 19th. The time set for the initiation of the assault on Riva Ridge was set for 2300 hours on February 18th, with the main attacks occurring on Mount Belvedere on 2300 Hours on February 19th. Once the 10th Mountain Division controlled the high ground, the rest of 5th Army could then begin to move northward toward the Po River Valley. On February 18th, the

²⁰³ Ibid.

²⁰⁴ Ibid.

mountain soldiers of the 1st Battalion 86th Mountain Infantry departed toward Mount Belvedere under the cover of darkness. The companies utilized communication wire that had been laid the previous day to communicate at hourly intervals back to their headquarters. Radios were only to be used in extreme emergencies as the key element to success was to achieve total surprise against the defending German soldiers.²⁰⁵

Additionally, the use of artillery for preparatory fires was also not used during the attack. Each company moved with the aid of search lights in the distance utilizing their assault climber teams to lay pitons and affix rope in order for follow-on forces to climb the rock face.²⁰⁶ All companies began the assault by approximately 0100 and the final companies had secured the ridge by 0500 on February 19th. Luck also played a part in the assault, minus some minor contacts, the Americans completely caught the Germans unaware and surprised. The 2nd Battalion, 1044th Grenadier Regiment was in the process of conducting a relief in place with the 232nd Fusilier Regiment when the soldiers of the 10th Mountain Division reached the summit of the ridge.²⁰⁷ American Soldiers were able to occupy unmanned German foxholes hastily and caught multiple patrols by complete surprise. By 0600 on February 19th, Riva Ridge was declared secured. The mountain soldiers of the 1st Battalion 86th Infantry had achieved complete tactical success. Their success was large due in part to their training but also in their willingness to understand

²⁰⁵ Dusenberry. *The North Apennines and Beyond*, 190.

²⁰⁶ Herrington, "Operations of the 10th Mountain Division on Mount Belvedere, February 16-26, 1945," 11.

²⁰⁷ *Ibid.*, 12.

the terrain and enemy and adapt their techniques and equipment to address problems and challenges.

The morning of February 19th and subsequent days was spent fighting German counter attacks and reinforcing Riva Ridge with supplies, ammunition, heavy weapons, and artillery. Moving the heavy equipment and supplies was critical to the eventual attack on Mount Belvedere. The job of moving the 75mm pack howitzers was tasked to the battalion's anti-tank platoon. Attempts were made to move the howitzers by sleds up the ridge but proved ineffective. Eventually, pack mules were utilized. The climb was so extreme that the mule used to carry the artillery died hours later after arriving at the summit.²⁰⁸ In addition to the pack animals, the 126th Mountain Engineers erected an aerial tramway that spanned 1,700 feet and climbed over 600 feet. The tramway was capable of ferrying close to 400 pounds per load. During the first days of its operation, it moved over 10,000 pounds of supplies and ammunition and evacuated over 50 casualties.²⁰⁹ As the 1st Battalion 86th Infantry continued to overcome the challenges of sustaining operations on the ridge, while fending off numerous German counter-attacks, the division was preparing for the assault on Mount Belvedere.

²⁰⁸ Dusenberry, *The North Apennines and Beyond*, 196.

²⁰⁹ Combined Arms Research Library. *Italian Campaign: Engineer Accomplishments February - March 1945; IV Corps*. (Washington, DC: Government Printing Office) n.d. Microfilm.

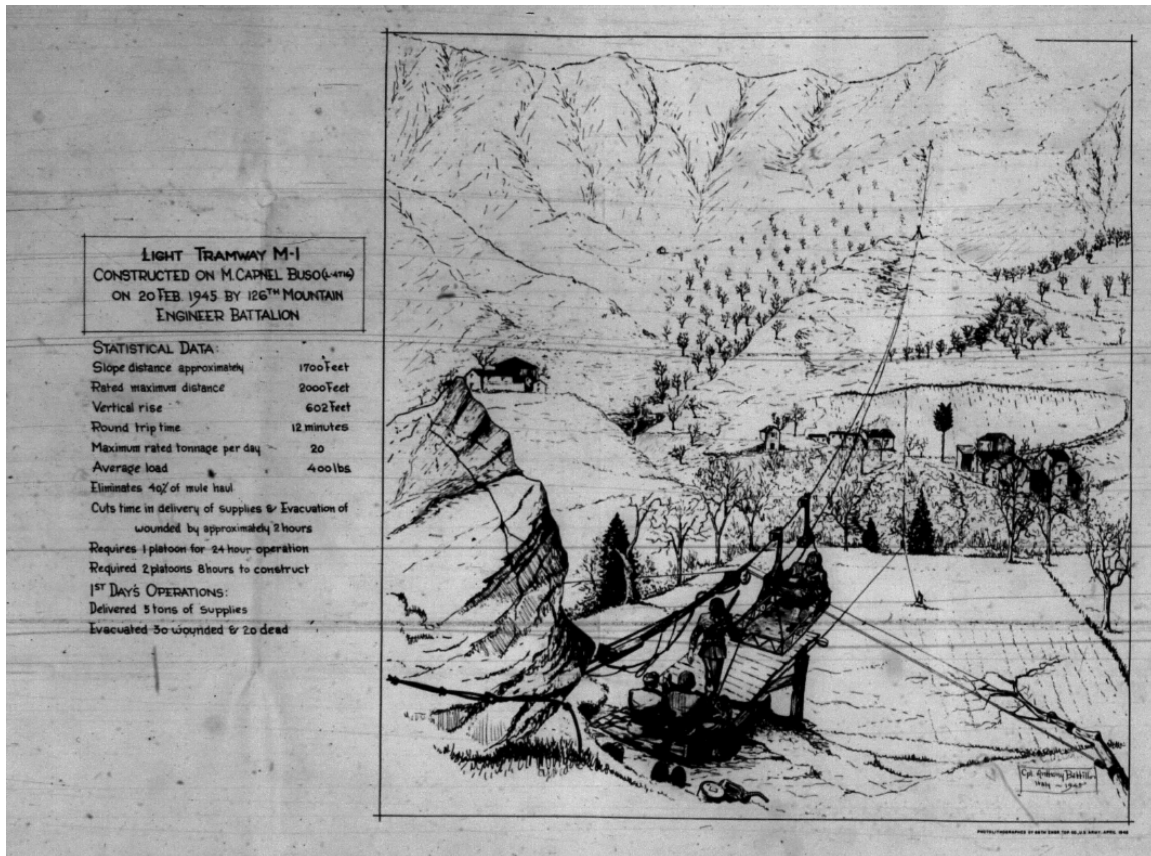


Figure 8. Engineer Tramway Constructed at Riva Ridge

Source: Italian Campaign: Engineer Accomplishments February - March 1945; IV Corps, n.d. microfilm.

During the night of February 18th, while the men of the 86th were assaulting Riva Ridge, the remainder of the division had used the cover of darkness to move north into pre-planned positions that included homes and barns.²¹⁰ To mitigate the risk of moving over open terrain, the decision was made to move at night. The subsequent occupation of structures in the valley below was virtually unnoticed by the German defenders.

²¹⁰ Herrington, "Operations of the 10th Mountain Division on Mount Belvedere, February 16-26, 1945," 15.

American soldiers were under strict orders on the day of February 19th to cease all movement outdoors in the positions they occupied in the valley below.²¹¹ Meanwhile, forces still operating in the Division's previous line resumed normal operations as not to alert the German defenders. As planned on 2300 hours on February 19th, the Division executed the main assault on Mount Belvedere. However, unlike the assault on Riva Ridge the Germans were prepared for an attack.

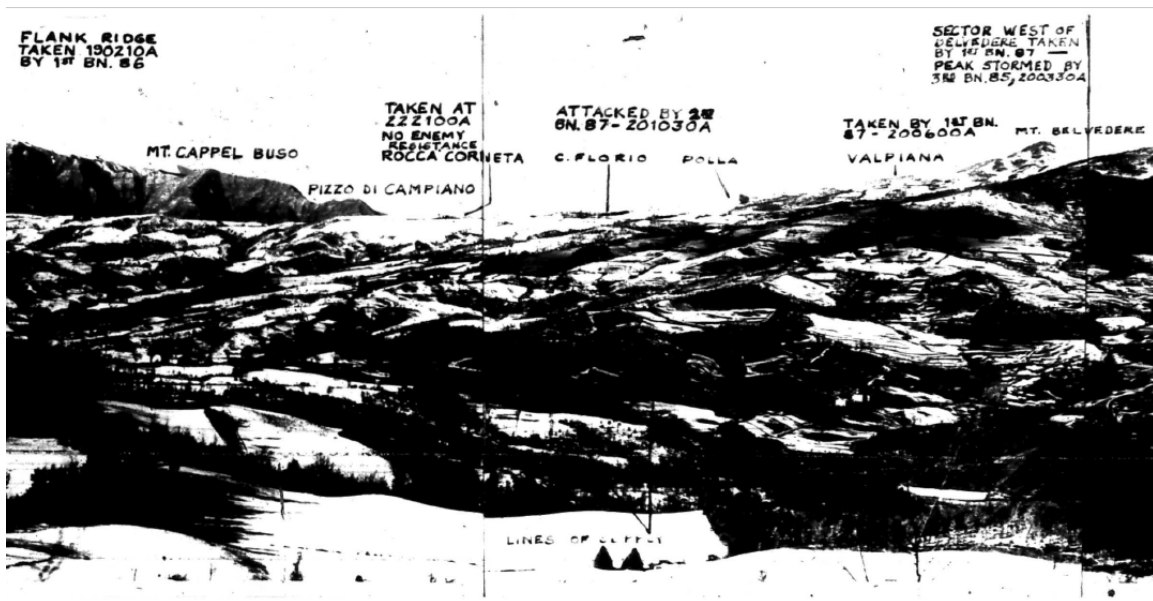


Figure 9. Operational Photograph of Riva and Mount Belvedere

Source: Italian Campaign: G-3 Periodic Report 19 February – 28 February 1945, n.d. Microfilm.

The assault on Mount Belvedere was successful but was a hard fight for the division. Fighting uphill, at night against stiff German resistance tested the 10th

²¹¹ Ibid.

Mountain's mettle. The first company made contact less than a half of a mile into the assault. Numerous companies from the 85th and 87th Mountain Infantry contended with intense small arms and artillery fire during and contended with minefields and fortified enemy positions.²¹² However, the assaulting battalions continued to maneuver to encircle Mount Belvedere. By 1000 hours on February 20th, Mount Belvedere was secured. The supporting fires from the artillery and heavy machine guns located on Riva Ridge, along with the air support provided by "Rover Joe" proved invaluable to the attack on Mount Belvedere. The first phase of the division's operation was successful due to the planning, preparation, and ability of the units, leaders and soldiers to successfully adapt to the challenges presented by the terrain and the enemy.

The division continued to attack the remaining hills to the northwest over the subsequent days. Each day was hard fought but the division continued to utilize their lessons learned from the initial operations to overwhelm the German defenders. On February 21st, the remainder of the 86th Mountain Infantry successfully attacked Hill 1088. On February 22-23, the 85th Mountain Infantry moved forward to take Hill 1055. The division secured the final objective of Mount Della Torraccia on the morning of February 25th.²¹³ The Division continued to fight off German counter attacks through early March but had achieved their mission to support IV Corps and Fifth Army's

²¹² Fisher, *US Army in World War II: The Mediterranean Theater of Operations; Cassino to the Alps*, 429.

²¹³ Herrington, "Operations of the 10th Mountain Division on Mount Belvedere, February 16-26, 1945," 16-19.

approach north. Following the operations, the 5th Army commander sent a message to the division stating:

The 10th Mountain Division in its first operation has been an inspiration to the entire Fifth Army. You have set a high standard and have demonstrated the highest qualifications in leadership and combat. Your outstanding success in your first operation augurs well for a brilliant future. I am proud indeed to have this division fighting shoulder to shoulder with the veteran divisions of the Fifth Army.²¹⁴

The 10th Mountain Division led the U.S. Fifth Army through the rest of the war in Italy. During each operation, the division show-cased its ability to overcome the enemy even when the Germans appeared in a position of advantage.

²¹⁴ Letter “MG George Hays to the 10th Mountain Division, March 10, 1945. Subject: Letter of Commendation.” Denver Public Library, Charles Minot Dole Papers, Box No. 7.

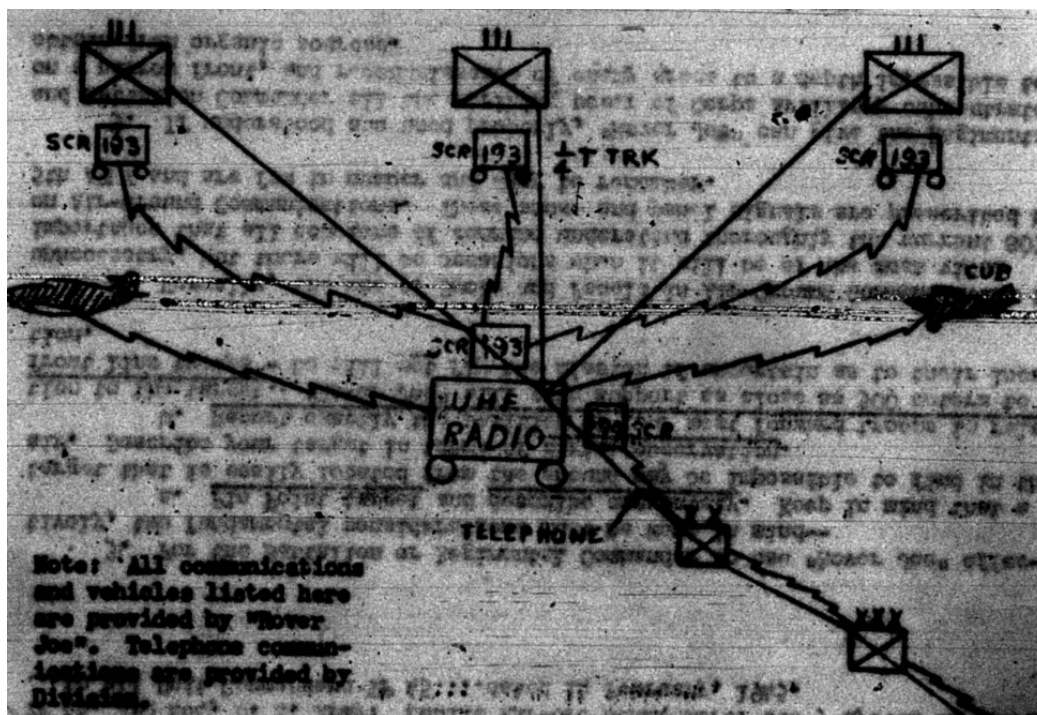


Figure 10. 5th Army “Rover Joe” Communications Architecture

Source: Italian Campaign: Special Annexes; Mobile Air-Ground Communications “Rover Joe” System of 5th Army. n.d. Microfilm.

The operations at Riva Ridge and Mount Belvedere forced other tactical adaptations by units and soldiers. For instance, it was identified that to maintain momentum when attacking in rugged terrain, supplementary ammunition needed to be loaded on pack boards. The ammunition was then moved by a secondary force behind the attacking force to provide immediate resupply and help reduce the weight carried by the attacking force.²¹⁵ Leaders and soldiers understood that once an objective was taken the

²¹⁵ Report “Army Ground Forces Intelligence Division Report A370: Headquarters 87th Mountain Infantry Lessons Learned in Combat.” Combined Arms Research Library N-12789.

Germans were going to shell the area immediately. Digging in deep immediately with overheard cover became a standard operating procedure. Additionally, leaders attempted to maneuver in the open only if they had the support of the Air Force observer and controller “Rover Joe” overhead.²¹⁶ This capability gave forward ground units the ability to coordinate close air support through a controller located in a liaison aircraft over the battlefield. The impacts were extremely timely and accurate fires from the air. Also, mortar men developed improved methods for firing at night such as marking rounds to allow for identifying the difference between high explosive and smoke rounds at night. Additionally, methods were also explored to mark aiming stakes for night firing.²¹⁷ The 10th Mountain also was also one of the first units to successfully use “Rover Joe” or the Tactical Air Command. This capability allowed units to have accurate close air support by having the controller in the air coordinating with both ground and air units to provide accurate air support. 5th Army and subsequently the 10th Mountain Division were some of the first units in the Army to employ forward liaison aircraft to control close air support.²¹⁸ These immediate adaptations in combat show the linkages between how peacetime innovation fostered a learning and adaptive spirit within the 10th Mountain Division. Soldiers and leaders constantly found new ways to tackle extremely complex

²¹⁶ Ibid., 5.

²¹⁷ Ibid., 11.

²¹⁸ Riley Sunderland, “Evolution of Command and Control Doctrine for Close Air Support” (Study, Office of Air Force History, 1973), 15.

and daunting tasks. More importantly, this adaptation occurred immediately and was key to the success of the division early on.

Conclusion

From the time the 10th Mountain Division was officially established in 1943 until its arrival in Italy in 1945, it continued to innovate in the areas of training, doctrine, and equipment. In many cases, the division took the foundations that were established by the MTC and built upon them to create a more robust and capable formation. Although, the division was challenged with personnel turnover and a variety of training challenges it still managed to execute a division level maneuver in the high-altitude and unforgiving terrain around Camp Hale. Although, the division had a brief period of uncertainty at Camp Swift, it still maximized training and built readiness in the formation, both physically and tactically. With the arrival of the division's first units to Italy in January of 1945, units, leaders, and soldiers wasted no time in taking their expertise and immediately adapting to the environment and the enemy. The time spent in the weeks leading up to the Riva Ridge and Mount Belvedere operation were well used. Units wasted no time initiating reconnaissance patrols, testing equipment, and tactics and adapting them to best fit the terrain and the enemy that faced them. The large amounts of adaptation that occurred in the division in January through February of 1945 highlight how innovation can translate to immediate organizational adaptation. The soldiers and leaders of the 10th Mountain Division lived nothing but constant change and challenges leading up to their deployment. Innovation was a reoccurring theme to manage the challenges of training in the areas of mountain and winter warfare, an area the Army never dealt with before. The formations consisted of soldiers and leaders that were

intelligent, physically fit and in many cases extremely knowledgeable in the areas of mountain and winter warfare. When you combine these two, you have an agile and adaptive formation, that conducted a successful division attack at night within its first 60 days in combat against a well-postured enemy. This was a feat that was unachievable by veteran units in three different attempts in the months prior to the 10th Mountain's arrival. The military formation that adapts the fastest will hold an advantage over their enemy. This advantage is what the 10th Mountain achieved. They adapted their expertise and techniques in a way that overwhelmed the capabilities of the German formations that they faced. It is for this reason that adaptation is so important to success in war.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The capabilities of the 10th Mountain Division were a unique construct that mirrored the capabilities of its innovative creators and leaders. For the 10th Mountain Division, the early peacetime innovations translated to the highly adaptive formation that it was in combat. It bore the qualities of the parts of American society that it represented. The Division was manned with some of the highest quality soldiers in the Army. The Division had physically fit, educated, and highly experienced mountain soldiers that it brought to the fight. However, none of this was possible without the intrepid leadership and innovation of Charles Minot Dole and his exhaustive efforts with the War Department. His work to assist with recruitment of personnel and development of equipment was instrumental in the development of the mountain soldiers. The efforts by Dole led to the early testing of winter training techniques by multiple divisions. This innovative approach to validating the feasibility of training units for mountain and winter warfare training was the first step to creating a formal structure and capability in the Army.

The innovative training developed by BG Rolfe and the MTC and MWWB was also critical in developing and testing mountain warfare equipment, building the organizational structure, and creating the standards for training. Without these organizations and the leadership of BG Rolfe, the Army would not have been able to organize, train, and equip mountain units. The time spent during the testing and the early development phases was critically important. However, there were numerous challenges that affected this period. Lack of resources, improper prioritization of the mission, and

lack of good liaison between headquarters all created friction in the process. Still, in the face of many of these challenges the MTC, MWWB and BG Rolfe achieved ground-breaking work for the Army. The training techniques and equipment experimentation were highly successful. This period of innovation coupled with the recruiting efforts of Charles Dole, was critical to the overall success of the 10th Mountain Division and its immediate adaptations in combat.

This persistent peace-time innovation occurred for many reasons. There was a lack of institutional knowledge in the Army about mountain and winter warfare. This knowledge deficit forced the War Department to leverage civilian expertise to assist with the development of training and equipment. Additionally, the War Department did not have the luxury of time to deliberate on ways to address these problems. This sense of urgency forced innovation to occur. Whether that included the recruitment efforts by the NSP or the recommendations by the Volunteer Winter Defense Committee, the Army and the War Department provided high quality mountain experts to fill the ranks of the 87th Mountain Infantry Regiment and the MTC.

The 10th Mountain Division and its origins went through multiple permutations in their purpose and missions. The initial mission of the 87th Mountain Infantry Regiment at Fort Lewis was to provide a test unit for mountain and winter warfare training. The early training at Fort Lewis was critical to the eventual capabilities that were later established at the MTC at Camp Hale. The mission of the MTC was to test equipment and organizations in the training of mountain and winter warfare. As a secondary outcome, in the process built a core group of well-trained men that would form the nucleus of the 10th Mountain Division in 1943. The division's initial mission focused on training as well.

The execution of the D- Series exercise validated that large-scale maneuvers in winter and mountain terrain were possible. The exercise also validated the individual training of the men and the capabilities of their equipment. Although evaluators identified shortfalls, especially in logistics and overall organizational structure, the division achieved its assigned mission. During the division's time at Camp Swift, General Marshall and the War Department finally determined the operational need for a mountain unit to assist with the challenges being faced by the men of 5th Army in Italy. During the division's operations in Italy it displayed why highly specialized and well-trained men were essential to winning in the mountains. The commander of 5th Army in Italy, LTG Lucian Truscott wrote in his autobiography "The performance of this 10th Mountain Division in its first battle was impressive; they performed like veterans. . . . The operation aroused the admiration of the whole Army."²¹⁹ In the end, the MTC and 10th Mountain Division provided the capability that the Army wanted and needed. It gave the Army well-trained and equipped mountain soldiers, capable of operating in winter and mountainous terrain against any enemy.

In addition, the successful and timely adaptations by the division upon its arrival in Italy are apparent. The division did not repeat the mistakes by other units in 5th Army that had occurred over the previous months. Instead, the leaders and soldiers of the division took an aggressive approach to understanding the enemy and the terrain through the use of extensive ground and air reconnaissance. The men quickly adapted their doctrine to create techniques that achieved the elements of surprise and maximized the

²¹⁹ Lucian Truscott, *Command Missions: A Personal Story* (New York, NY: E.P. Dutton and Company, 1954), 468.

capabilities of the equipment assigned to them. Additionally, the 10th Mountain conducted thorough and efficient planning and rehearsals. Leaders and soldiers alike were knowledgeable and confident in their plans and therefore, were able to improvise and utilize creative techniques to overwhelm the German opposition. The division's immediate and successful adaptations highlight the importance of the years of innovation and how innovation translated into adaptation. Both aspects played a vital role in the evolution of the division's capabilities.

This historical example of how peacetime innovation increased wartime adaptation has direct applications today. Some of the lessons learned by the Army and the War Department through the creation of the 10th Mountain Division are directly relevant to how we as an institution address some of the Army's Warfighting Challenges (AWFCs). The Army Capabilities Integration Center (ARCIC) defines the AWFCs as "current and mid-term military problems and gaps that help define capabilities needed for current and future force combat effectiveness."²²⁰ There are multiple linkages between how the War Department created a new capability to fight in the mountains in World War II. and how today's Army is attempting to identify and address capability issues. For example, AWFC #4 is how to adapt the institutional Army and innovate. This was one of the exact challenges faced by War Department in 1940. The Army had to adapt and innovate to create new capabilities that were capable of meeting the threat abroad. With the need for a mountain capability in the Army, there was a willingness to leverage non-institutional expertise and to circumvent certain established processes to create capability.

²²⁰ ARCIC, "Army Warfighting Challenges," The U.S. Army, accessed May 14, 2017, https://www.army.mil/article/38972/Army_Warfighting_Challenges/.

The equipment development by the MWWB and personnel recruitment by the NSP were non-standard practices that required the institutional Army to innovate. Had the innovations not occurred or had leaders been unwilling to change or modify the normal systems of practice the idea of building a mountain and winter warfare capability would have died with Charles Dole's first meeting with General Marshall.

Every military in history faces the challenges of preparing their forces for war, often without knowing where or when they will fight or who their opponent will be. For contemporary militaries, this is truer than ever. Today's threats in the world today are more diverse and more unpredictable than ever before. To help address how we prepare for this next war the U.S. Army is examining AWFC #8 to understand how to enhance realistic training. Arguably, in 1943 few units in the Army trained under more realistic conditions than the soldiers of the 10th Mountain Division did. Training conditions presented to the men of the 10th Mountain Division were more extreme than anything they experienced in combat. This level of realistic training was achieved because the Army understood the important roles that altitude, terrain and extreme weather played in mountain operations. The Army selected Camp Hale because it's terrain provided the appropriate and realistic challenges to prepare the soldiers of the 10th Mountain Division for some of the worst conditions and situations possible. A soldier from the 10th Mountain was quoted as saying "If we can survive this (D-Series), we can survive anything."²²¹ Creating tough, realistic, and demanding training is what we should expect of our unit leaders. Your best day in a training exercise should replicate your worst day in

²²¹ Brooks, 10th Mountain Division, 24.

combat. This preparation is what the D-Series exercise provided to the men of the 10th Mountain Division. It was a training exercise that mentally and physically pushed them to their limits and ultimately prepared them for the rigors of combat.

The 10th Mountain Division history also offers insight in how we improve soldier, leader, and team performance (AWFC #9). For the 10th Mountain Division, it started with an innovative recruitment strategy. The Army went outside of the institutional norms to leverage the expertise of a civilian organization to recruit personnel. The NSP had access to the right social networks and the right types of people. They also had the appropriate expertise to assess applicants and the quality for service before presenting their files to the Army. This process made many people nervous. There was a fear that a bunch of Ivy League skiers was not the right fit for the Army. However, the quality and capability that they brought to the Army were invaluable. As we look at new capabilities for today's Army, it is necessary to maintain an open perspective to ensure that we recruit the right people for the right jobs. Sometimes, the right people may not look like the right fit for the Army. However, it is our duty to train and prepare them while also respecting the skill sets and backgrounds that they bring to the fight.

The 10th Mountain Division history also offers some insight into how the Army develops agile and adaptive leaders (AWFC #10). Prior to the deployment of the 10th Mountain Division to Italy, the leaders of the MTC, MWWB and the 10th Mountain had generic missions and were minimally resourced. It is logical to think that the answer to fix these problems is the procurement of more resources to include time, personnel, equipment, etc. However, it appears that operating in a resource constrained environment forced leaders and soldiers to innovate to address a variety of challenges. The 10th

Mountain Division soldiers and leaders trained and prepared for war in an environment where the missions were vague and the metrics for success were defined as they occurred. It was the innovation, ambiguity, and uncertainty in training that increased the unit leaders' ability to think outside of the box. Leaders and soldiers in the 10th Mountain Division were not afraid to experiment and try new things; it was all they did in their training and preparation for combat. If the Army wants leaders that can think on their feet through complex situations then it must foster an environment where a certain level of risk is acceptable. Orders can intentionally be ambiguous to force leaders to innovate. In this innovative environment, units and their personnel are more like to quickly adapt and successfully meet challenges presented to them in combat.

The way the 10th Mountain trained for an ambiguous mission and an unknown theater provided them with capabilities that are reflective of how today's Army is addressing the new concept of multi-domain battle. The terrain shaped how the 10th Mountain Division trained. However, the specific area that the division would operate in was not known until the last minute. Therefore, training addressed the range of mountain and winter challenges. This training prepared units to be comfortable operating dispersed, in harsh terrain, with limited communications. The fact that they could operate this way, along with their specialized training, allowed them to create multiple dilemmas for the enemy. The Riva Ridge and Mount Belvedere Operation showed how large formations achieved the element of surprise and leveraged their training and equipment to seize the high ground rapidly. Multiple examples exist during this operation that highlight how surprise, the use of special equipment, tactical adaptations, and combined arms completely overwhelmed an enemy that occupied key terrain. The division's ability to

create multiple tactical dilemmas changed the momentum of the operation in its favor. These are some of the principles that the Army is currently trying to develop by synchronizing tactical actions in time, space, and purpose in multiple domains simultaneously. These coordinated actions will force the enemy to choose where to commit military resources. This can potentially create opportunities that we must be prepared to exploit. The only way to achieve this synchronization is through highly trained and well equipped formations that can operate independently and use their capabilities to exploit these opportunities when they arise.

The U.S. military must approach the improvement of current capabilities and the creation of new capabilities in an innovative manner. The only way to prepare for the unknown threats of the future is to build capabilities that leaders can adapt to certain situations to meet the challenges presented in war. These adaptations can only be achieved by being prepared to move outside of the bureaucratic norms of some of the military processes and by leveraging new expertise and techniques to build capabilities to fight the emerging threats of the 21st century.

Recommendations

1. As the U.S. Army faces new and uncertain challenges across the globe, the need to create new capabilities in organizations, doctrine, and equipment is critical. As new threats in the sea, air, land and cyber domains appear, it is critical for the Army to produce capable and well-equipped formations that are prepared to adapt and meet any challenges that face them. If the correlation is valid, it suggests that innovation must occur in peacetime if quick wartime adaptation is required. It is not that units will not

adapt, but the speed and efficiency in which they adapt will be slower. Slower adaptation presents risk to both the force and the mission.

It is also necessary to innovate in training to challenge formations and push them to the extent of their capabilities. Although the Army does this well at both the National Training Center and Joint Readiness Training Center, it is much harder to achieve during the standard unit training cycle. Commanders and leaders at every echelon must think creatively while simultaneously managing risk to create tough and challenging training scenarios that push units physically, mentally, tactically, and technically. The Task and Evaluation Outlines that provide the standard to evaluate training should be the baseline from which units go above and beyond to challenge their leaders and subordinates. Additionally, units should constantly be searching for better ways to employ their capabilities and their equipment. Critical to this whole process is the sharing of lessons learned and best practices within the Army. Innovation is a collaborative and collective effort to improve capability. If units embody the philosophy of innovation in peacetime, their ability to adapt in the face of unforeseen challenges will only increase.

2. There are multiple areas for further research. This paper focused on the period from 1940-1943 and primarily looked at the impacts to innovation and adaptation as it pertained to the division and its infantry regiments. A recommendation for future investigation is to examine the history of the enablers that were not discussed in this paper. Examining the early training and development of equipment for enablers such as the artillery, engineers and logisticians would be beneficial. Taking this information and identifying innovative trends that occurred prior to 1945 would then highlight how these units did or did not adapt in combat. This examination would provide additional data to

support or refute the argument made in this paper. In addition, comparing the achievements and capabilities of the 10th Mountain Division against other divisions in the 5th or 8th Armies, fighting in similar terrain against a similar enemy, would provide additional comparisons to support or refute this paper's thesis.

3. This paper also suggests implications for how the Army balances the ability to build new capabilities within the DOTMLPF framework while balancing the requirements and processes that are a part of the Army force management system. If a new capability or requirement develops that was not identified previously in a future concept or in experimentation, it may be necessary to look at the feasibility of streamlining and or reducing the timeline associated with the normal Army force management processes. This streamlining should be the exception and not the rule. However, much like the innovations and adaptations that occurred to counter improvised explosive devices, the Army may need to produce capability quickly to meet the challenges of an unforeseen enemy capability. In this scenario, we should maximize the availability of civilian expertise, available technology, and skilled personnel to create the capability needed to achieve success on the battlefield. This concept was the approach taken by the War Department and the Army to create a mountain and winter warfare capability. In numerous instances, standard procedures and policies were changed, modified, or bypassed altogether to tackle a unique problem for the Army.

The achievements made by the Army and the War Department from 1940 until 1945 were numerous. In the case of training for mountain and winter warfare, units and leaders faced many challenges. However, over the course of four and a half years the Army created one of the finest divisions at the time. The 10th Mountain Division

provided the Army with the capability that it required and achieved success in combat. None of this would have occurred without fostering innovation and adaptation. These lessons should be considered as we look ahead to the next unknown battlefield that the Army will fight on.

APPENDIX A

NATIONAL SKI PATROL APPLICATION

MAY 24 1943

Approved: National Ski Assn.; by SB

Assignment to MTC requested _____

direct, through Rec. C. _____ through AGO _____

Form 10C 10.1.42

NATIONAL SKI ASSOCIATION QUESTIONNAIRE

FOR MEN SEEKING ENLISTMENT IN, OR ASSIGNMENT OR TRANSFER TO, MOUNTAIN TROOPS

In submitting this to the National Ski Patrol System, 415 Lexington Avenue, New York City, I wish to make clear that if the National Ski Association approves

A. ☐ I intend to enlist as a volunteer, and will do so when (but not before) I receive a notice from The Adjutant General's Office directing me to a recruiting officer authorized to accept my enlistment in a mountain unit.

or

B. ☐ I intend to ask my draft board for immediate induction, with the understanding that the National Ski Association will recommend that I be assigned to a mountain unit.

or

C. ☒ I intend to wait for my regular induction, since I expect this within the next few weeks, with the same understanding as above.

or

D. ☐ I intend to join the Enlisted Reserve Corps, at _____, and hope that the National Ski Association will help me get an assignment to a mountain unit upon completion of my officer's training.

or

E. ☐ Being already in the Army, but undergoing basic training and still unassigned, I hope The Adjutant General's Office may assign me upon completion of basic training to a mountain unit.

or

F. ☐ Being already in the Army, and assigned, I intend to request transfer to the Mountain Training Center through channels, with the understanding that the National Ski Association will send my questionnaire to the Commanding Officer of the Mountain Training Center, for his information if my request reaches him for his approval.

I attach the required letters of recommendation.

Date May 18, 1943 Applicant's Signature Wm A. Healy

1. NAME (Please print) William A. Healy

2. ADDRESS 3737 J.W. Council Crest Dr, Portland, Oregon

3. AGE 18 4. MARRIED? No 5. SINGLE? Yes 6. No. of DEPENDENTS None

7. NATIVE BORN? X 8. NATURALIZED? _____ 9. ALIEN WITH FIRST PAPERS? _____
(No aliens may enlist at recruiting offices, but those with first papers may go in through voluntary induction at their draft boards.)

10. IF SUBJECT TO DRAFT: a. Your Number _____ b. Draft Board No. 2

c. Draft Board Address Mad Building, Portland Oregon

d. Induction Date: Probable June 1943 Definite ?

11. EDUCATIONAL BACKGROUND (Give dates, grades and years completed)

- a. Grade School 8 years of Grade school
 b. High School 4 years ending June 1943
 c. College None
 d. Post Graduate and Technical _____
 e. Special Studies _____
 f. Languages Spoken and Read _____

12. PREVIOUS OCCUPATION, WITH APPROXIMATE DATES

Student

13. HAVE YOU HAD PREVIOUS MILITARY EXPERIENCE? IF SO, DESCRIBE.

Yes, one month at C.M.T.C. in 1939 (Basic training)

14. SKIING EXPERIENCE

- a. Cross Country 5 years, (where?) Mt. Hood & Snoqualmie, Wash.
 b. Downhill 5 years, (where?) various places in N.W. Wash.
 c. Touring 5 years, (where?) same
 d. Ski Mountaineering 2 years, (where?) Mt. Hood, Or.
 e. No. years instructing experience _____ Professional? _____ Amateur? _____
 Technique you taught _____

15. MOUNTAINEERING AND CAMPING EXPERIENCE (Give locations and length of time engaged)

- a. Snow and Ice Climbing on Mount Hood.
 b. Rock Climbing _____
 c. Forestry Service _____
 d. Timber Cruising _____
 e. Packing horses or mules _____
 f. Mountain or forest guiding _____
 g. Trapping _____
 h. Prospecting _____

16. ANY OTHER EXPERIENCE OR SPECIAL TRAINING QUALIFYING YOU FOR MOUNTAIN TROOPS:
 (Use separate sheet if necessary, and attach to this sheet.)

this young man is one of our "top" junior skiers
at Mount Hood.
Fred H. McNeil

628 N.E. BROADWAY



GARFIELD 4572

"GUARANTEED SKI and MOUNTAINEERING EQUIPMENT"
PORTLAND, OREGON

May 18, 1943

TO WHOM IT MAY CONCERN:

This is with regard to the
application of William Healy for admission to
the Ski and Mountain Troops.

I am adding my endorsement to
his application. I have associated with this
man for several years and will vouch for the data
furnished on his application form.

Yours truly

Everett L. Darr

A handwritten signature in cursive script that reads 'Everett L. Darr'.

President, Mount Hood Ski
Patrol

A. G. SEBERTS, PRESIDENT-MANAGER
A. H. HERNDOLTER, VICE-PRESIDENT
PAUL A. SCOTT, SECRETARY-TREASURER

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Everything for the Home

312 S.W. FIFTH AVENUE AT OAK
PORTLAND, OREGON

April 23, 1943

TO WHOM IT MAY CONCERN:

It is, indeed, a pleasure to recommend to the United States Army Mountain Troops, Mr. William A Healy, Jr., 3737 S.W. Council Crest Drive, Portland, Oregon.

I have known him for a number of years, and as Chairman of the Multnomah Athletic Club Ski team, have had an opportunity to observe his demeanor and activities very closely, particularly in the past three or four years.

This past season, while there have been but few Junior Races, yet he won the Pacific-Northwest Junior downhill and slalom championship, which speaks for itself in the matter of skiing.

He is sturdy and has spent considerable time on the mountains. In passing I might mention that he boxes very well having knocked out his opponent in the amateur fights at Multnomah Athletic Club.

Inasmuch as he is finishing High School on May 28, 1943 and has majored in mathematics, physics and chemistry and is President of the student body, you will understand that he is a very high type applicant for the Mountain Troops.

His character and loyalty are above reproach and in view of his unusual qualifications, I am delighted to have the privilege to recommend him to you.

Respectfully yours,

EDWARDS FURNITURE COMPANY

By


President

ACS:o

Source: Charles Minot Dole Papers, Denver Public Library

APPENDIX B

NSP RECRUITING 1941 -1945

Analysis of NSPS Recruiting December 1941 – July 1945	
<u>Enlisted Personnel</u>	
Volunteers authorized to enlist	472
Inductees and Voluntary Inductees recommended to Adjutant Generals Office (December 1941 – April 1943)	2581
Inductees and Voluntary Inductees assigned directly to Camp Hale without reference to Adjutant Generals Office (April – December 1943)	1909
Inductees assigned to 10th Division on conclusion of basic training (December 1943 – July 1945)	2576
Total	7538
<u>Officers</u>	
Approved transfers from other units or for assignment upon graduation from Officer Candidate School	333
Approved applications from medical officers	43
Total	376
<u>Grand Total</u>	<u>7914</u>

Source: Created by Author, Denver Public Library, Charles Minot Dole Papers, Box No. 7.

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